

1231734

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

September 29, 2004

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE.

APPLICATION NUMBER: 60/457,231

FILING DATE: *March 25, 2003*

RELATED PCT APPLICATION NUMBER: *PCT/US04/09142*

Certified by



Jon W Dudas
Jon W Dudas

Acting Under Secretary of Commerce
for Intellectual Property
and Acting Director of the U.S.
Patent and Trademark Office

03-26-03

60457231

A/PROV

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No.

EV179470099US

INVENTOR(S)

Given Name (first and middle (if any))	Family Name or Surname	Residence (City and either State or Foreign Country)
William H.	Punzel	Fort Atkinson, WI
Jane E.	Glass	Fort Atkinson, WI
Andrew J.	Kolman	Milton, WI

☒ Additional inventors are being named on the 1 separately numbered sheets attached hereto**TITLE OF THE INVENTION (500 characters max)**

STORAGE UNIT FOR STORING GUNS AND RELATED EQUIPMENT

Direct all correspondence to:

CORRESPONDENCE ADDRESS

Customer Number

23598

Place Customer Number
Bar Code Label here

OR

Type Customer Number here

Firm or
Individual Name

Boyle, Fredrickson, Newholm, Stein & Gratz, S.C.

Address

250 East Wisconsin Avenue, Suite 1030

Address

City

Milwaukee

State

WI

ZIP

53202

Country

USA

Telephone

414-225-9755

Fax

414-225-9753

ENCLOSED APPLICATION PARTS (check all that apply)

Specification Number of Pages

15



CD(s), Number



Drawing(s) Number of Sheets

42



Other (specify)



Application Data Sheet. See 37 CFR 1.76

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT

Applicant claims small entity status. See 37 CFR 1.27.



A check or money order is enclosed to cover the filing fees



The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number:

50-1170



Payment by credit card. Form PTO-2038 is attached.

FILING FEE
AMOUNT (\$)

\$160.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.



No.



Yes, the name of the U.S. Government agency and the Government contract number are:

Respectfully submitted,

SIGNATURE

Date

3/25/03

TYPED or PRINTED NAME

Andrew S. McConnell

REGISTRATION NO.

(if appropriate)

Docket Number:

32,272

353.259

TELEPHONE

414-225-9755

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, D.C. 20231.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

☐ Applicant Claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$160.00)

Complete if Known

Application Number	
Filing Date	
First Named Inventor	William H. Punzel
Examiner Name	
Group Art Unit	
Attorney Docket No.	353.259

METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☐ Deposit Account

Deposit Account Number	50-1170
Deposit Account Name	Boyle, Fredrickson, Newholm, Stein & Gatz S.C.

The Commissioner is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) during the pendency of this application

☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid
101	750	201	375	Utility filing fee	
106	330	206	165	Design filing fee	
107	510	207	255	Plant filing fee	
108	740	208	370	Reissue filing fee	
114	160	214	80	Provisional filing fee	160.00

SUBTOTAL (1) (\$160.00)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	-20**=	Extra Claims	Fee from below	Fee Paid
Independent Claims	- 3**=			
Multiple Dependent				

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description
103	18	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple dependent claim, if not paid
109	84	209	42	**Reissue independent claims over original patent
110	18	210	9	**Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$0)

** or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity		Small Entity			Fee Paid
Fee	Fee	Fee	Fee		
105	130	205	65	Surcharge – late filing fee or oath	
127	50	227	25	Surcharge – late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for <i>ex parte</i> reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	410	216	205	Extension for reply within second month	
117	930	217	465	Extension for reply within third month	
118	1,440	218	720	Extension for reply within fourth month	
128	1,960	228	980	Extension for reply within fifth month	
119	320	219	160	Notice of Appeal	
120	320	220	160	Filing a brief in support of an appeal	
121	280	221	140	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive – unavoidable	
141	1,280	241	640	Petition to revive – unintentional	
142	1,280	242	640	Utility issue fee (or reissue)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Processing fee under 37 CFR 1.17(q)	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	740	246	370	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))	
179	740	279	370	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$0)

SUBMITTED BY

Name (Print/Type)	Andrew S. McConnell	Registration No. (Attorney/Agent)	32,272	Telephone	414-225-9755
Signature	<i>Andrew S. McConnell</i>	Date	3/25/03		

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

60457231.032503

Applicants: WILLIAM H. PUNZEL ET AL

CERTIFICATE OF EXPRESS MAIL

This is to certify that this correspondence is being deposited with the United States Postal Service as EXPRESS MAIL - POST OFFICE TO ADDRESSEE, in an envelope addressed to BOX PROVISIONAL PATENT APPLICATION, COMMISSIONER FOR PATENTS, Washington, DC 20231 on March 25, 2003. The Express Mail Label No. is EV179470099US.

Dawn M. Oleszak 3-25-03
Dawn M. Oleszak Date

STORAGE UNIT FOR STORING GUNS AND RELATED EQUIPMENT

Inventors: William H. Punzel
Jane E. Glass
Andrew J. Kolman
Steven S. Dingle
James C. Muth

Attorneys for Applicant:
Boyle, Fredrickson, Newholm, Stein & Gratz, S.C.
250 East Wisconsin Avenue, Suite 1030
Milwaukee, Wisconsin 53202
(414) 225-9755
Fax: (414) 225-9753
Attorney Docket No.: 353.259

STORAGE UNIT FOR STORING GUNS AND RELATED EQUIPMENT

A storage unit 10 generally includes a base 12, a top 14, a pair of side walls 16 and a back wall 18. Storage unit 10 is especially well suited for use in a military application, for storing guns and related equipment.

5 In one form, storage unit 10 may have a four post construction, in which corner posts C1, C2, C3 and C4 extend vertically between the corners of base 12 and top 14, and side walls 16 and back wall 18 are secured to and extend between the corner posts. It is understood, however, that the basic construction of storage unit 10 may take any other satisfactory form.

10 Storage unit 10 is constructed such that base 12, top 14, side walls 16 and back wall 18 cooperate to define an interior that is accessible through an open front. A pair of bi-fold doors, shown generally at 20a, 20b, are configured to selectively close the open front of storage unit 10 and to selectively provide access to the interior of storage unit 10 through the open front. Bi-fold doors 20a, 20b are of a mirror image construction, and include respective
15 inner door sections 22a, 22b and outer door sections 24a, 24b. The facing edges of inner door section 22a and outer door section 22b are connected via a hinge 26a, and the facing edges of inner door section 22b and outer door section 22b are connected via a hinge 26b. Each of door sections 22a, 22b, 24a and 24b may be formed of a sheet metal material having a perforated construction, to provide visual access to the interior of storage unit 10 when
20 doors 20a, 20b are closed.

Base 12 of storage unit 10 includes an outer front wall 28 located below the lower ends of door sections 22a, 22b and 24a, 24b, and an inner wall 30 spaced inwardly from outer wall 28 to define a transversely extending, upwardly facing guide channel 32. Similarly, top 14 of storage unit 10 includes an outer front wall 34 located above the upper
25 ends of door sections 22a, 22b, 24a and 24b, and an inner wall 36 spaced inwardly from outer wall 34 to define a transversely extending, downwardly facing guide channel 38. Inner door section 22a includes a lower roller 40a located within lower guide channel 32, and an upper roller 42a located within upper guide channel 38. Likewise, inner door section 22b includes a lower roller 40b located within lower guide channel 32, and an upper roller 42b

located within upper guide channel 38. With this construction, rollers 40a and 42a guide movement of inner door section 22a and outer door section 24a between a fully closed position, in which door sections 22a and 24a are coplanar and overlies half of the open front of storage unit 10, and a fully open position in which door sections 22a and 24a are folded together and parallel to each other, to expose the open front of storage unit 10. Similarly, rollers 40b and 42b guide movement of inner door section 22b and outer door section 24b between a fully closed position, in which door sections 22b and 24b are coplanar and overlies the other half of the open front of storage unit 10, and a fully open position in which door sections 22b and 24b are folded together and parallel to each other, to expose the open front of storage unit 10.

Lower guide channel 32 includes an upstanding stop wall 43, and a series of stop tabs 45 extend downwardly from upper guide channel 38. Stop wall 43 and stop tabs 45 are positioned and configured to locate door sections 22a, 24a and 22b, 24b in a coplanar relationship when doors 20a, 20b are closed.

Doors 20a, 20b include a single-point locking mechanism to selectively maintain door sections 22a, 24a and 22b, 24b in the closed position, to prevent access to the interior of storage unit 10. The locking mechanism includes a locking hub 44a pivotably mounted to the inside of inner door section 22a adjacent the hinge joint between inner door section 22a and outer door section 24a, and a locking hub 44b pivotably mounted to the inside of inner door section 22b adjacent the hinge joint between inner door section 22b and outer door section 24b. A lower lock rod 46a extends downwardly from locking hub 44a, and an upper lock rod 48a extends upwardly from locking hub 44a. Lock rods 46a, 48a are mounted to opposite sides of locking hub 44a. Similarly, a lower lock rod 46b extends downwardly from one side of locking hub 44b, and an upper lock rod 48b extends upwardly from the opposite side of locking hub 44b. Locking hubs 44a, 44b are configured such that the connection of lock rods 46a, 46b and 48a, 48b, respectively, is offset from the pivot axis of the respective locking hub 44a, 44b.

Lock rods 46a, 48a and 46b, 48b are configured so as to be movable between an extended position and a retracted position in response to rotation of locking hubs 44a,

44b, respectively. In the extended position, the ends of lower lock rods 46a, 46b project downwardly from the lower edges of inner door sections 22a, 22b, respectively. In the retracted position, the ends of lower lock rods 46a, 46b are positioned flush with or slightly recessed from the lower edges of inner door sections 22a, 22b, respectively. Similarly, in the extended position, the ends of upper lock rods 48a, 48b project upwardly from the upper edges of inner door sections 22a, 22b, respectively. In the retracted position, the ends of upper lock rods 48a, 48b are positioned flush with or slightly recessed from the upper edges of inner door sections 22a, 22b, respectively.

The locking mechanism further includes a locking bar 50a that is connected at its outer end to locking hub 44a, and a locking bar 50b that is connected at its outer end to locking hub 44b. In this manner, locking bars 50a, 50b are pivotably mounted to respective inner door sections 22a, 22b, such that movement of locking bars 50a, 50b is operable to impart movement to locking hubs 44a, 44b, respectively. Locking bars 50a, 50b are located on the outside of inner door sections 22a, 22b, respectively, and each locking bar 50a, 50b is pivotable between a locking position and a release position. When locking bars 50a, 50b are in the locking position, the inner ends of locking bars 50a, 50b are located adjacent each other and locking hubs 44a, 44b are moved so as to place lock rods 46, 48a and 46b, 48b, respectively, in their extended positions. In this manner, when doors 20a, 20b are closed and locking bars 50a and 50b are moved to the locking position, the ends of lower lock rods 46a and 46b are engaged within lower guide channel 32 and the ends of upper lock rods 48a and 48b are engaged within upper guide channel 38, to prevent movement of doors 20a, 20b to the open position. When locking bars 50a, 50b are in the release position, the inner ends of locking bars 50a, 50b are pivoted away from each other under the force of gravity and locking hubs 44a, 44b are moved so as to place lock rods 46, 48a and 46b, 48b, respectively, in their retracted positions. In this manner, when doors 20a, 20b are closed and locking bars 50a and 50b are moved to the release position, the ends of lower lock rods 46a and 46b are moved upwardly out of engagement with lower guide channel 32 and the ends of upper lock rods 48a and 48b are moved downwardly out of engagement with upper guide channel 38, to enable movement of doors 20a, 20b to the open position.

The inner ends of locking bars 50a and 50b include respective ears 52a and 52b that are located adjacent each other when locking bars 50a and 50b are in the locking position. An opening is formed in each ear 50a and 50b, and the openings in ears 50a and 50b are in alignment with each other when locking bars 50a and 50b are in the locking position. A lock 54 is engaged within the aligned openings in ears 52a and 52b, so as to prevent locking bars 50a and 50b from being moved away from the locking position other than by an authorized user that is capable of unlocking lock 54. It can thus be appreciated that the construction of doors 20a, 20b and the locking mechanism provides a single-point locking arrangement for a bi-fold door construction, to enable quick and easy opening of doors 20a and 20b when desired in a manner that exposes substantially the entire open front of storage unit 10.

Doors 20a and 20b are mounted on a slide-type retraction and extension arrangement so as to enable doors 20a and 20b to be positioned within the interior of storage unit 10 when doors 20a and 20b are in the open position. Each slide-type extension and retraction arrangement is constructed in a known manner, and includes upper and lower guide channels 56 that are located adjacent side walls 16 and extend in a forward-rearward direction. In one embodiment, guide channels 56 may be mounted to corner posts C1, C2, C3 and C4, although it is understood that any other type of mounting arrangement may be employed. In addition, each slide-type extension and retraction arrangement includes a carriage 58 that is movable forwardly and rearwardly within guide channel 56. Bearings or any other satisfactory mechanism may be interposed between each guide channel 56 and its associated carriage 58, to facilitate movement of carriage 58 relative to guide channel 56.

Each outer door section 24a, 24b is pivotably mounted to each carriage 58 via a hinge 60, to enable outer door sections 24a, 24b to be moved between the open and closed positions.

With this construction, it can be appreciated that each of doors 20a, 20b can be recessed or moved into the interior of storage unit 10 when doors 20a, 20b are open, by application of an inward force to doors 20a, 20b so as to cause carriages 58 to move inwardly on guide channels 56. In this manner, the front of storage unit 10 is unobstructed by doors

20a and 20b, and doors 20a and 20b do not occupy an aisle or other space adjacent the front of storage unit 10. This is a significant feature, in that one of the primary applications of storage unit 10 may be in a military facility or vessel, where space is at a premium and in which quick and easy access to weapons is required.

5 A side guide wall 62 is spaced inwardly from the inner surface of each side wall 16 of storage unit 10, at the upper end of side wall 16. A space is defined between guide wall 62 and side wall 16, within which upper roller 22a or 22b is received when the associated door 20a or 20b, respectively, is moved into the interior of storage unit 10. Guide wall 62 may be formed integrally with the inner wall of upper guide channel 38, which
10 together may be secured to the top wall defined by top 14 in a manner as is known.

 Weapon and accessory mounting or support components are adapted to be secured within the interior of storage unit 10, in order to store guns and related equipment. Such components include three differently configured stock rests 66, 68 and 70, which are adapted to be placed in the bottom of the interior of storage unit 10, in combination with a
15 with a support rail 72 and a bin assembly 74.

 Stock rest 66 is configured to receive and support the butt end of each of a series of guns having a first configuration in which the gun has a relatively wide stock, such as an M16 or M4 machine gun shown generally at G1. Stock rest 66 includes a series of side-by-side upwardly facing channels or troughs defined by a series of lower walls 76 in
20 combination with a series of spaced apart upstanding dividers 78. Each lower wall 76 includes an opening 80 that is configured to receive the lower end of a gun accessory A1, such as a scope or a bayonet adapted for use with gun G1.

 Stock rest 68 is configured to receive and support the butt end of each of a series of guns having a second configuration in which the gun has a relatively narrow stock,
25 such as an M240 or M249 rifle shown generally at G2. Stock rest 68 includes a series of side-by-side upwardly facing channels or troughs defined by a series of lower walls 82 in combination with a series of spaced apart upstanding dividers 84.

 Stock rest 70 is configured to receive and support the butt end of each of a series of guns having a third configuration in which the gun has a specially configured round

butt end, such as an M2 machine gun shown generally at G3. Stock rest 70 includes a support wall 86 having a series of spaced apart openings 88, each of which is configured to receive the butt end of one of guns G3.

Base 12 of storage unit 10 includes an upwardly facing lower wall 90 that
5 defines the lower extent of the interior of storage unit 10, and lower wall 90 includes front and rear rows of keyhole-shaped openings 92. Each of stock rests 66, 68 and 70 includes a pair of end walls 94, which are provided with tabs at their lower ends, each of which is configured to be received within one of openings 92. In addition, stock rests 66, 68 and 70 may include one or more intermediate support walls 96 located between end walls 94, which
10 may also include tabs that are configured to be received within openings 92. With this arrangement, any one of stock rests 66, 68 and 70 may be mounted within the interior of storage unit 10 by engagement with lower wall 90.

While a tab and opening arrangement has been shown and described for use in mounting stock rests 66, 68 and 70 within the interior of storage unit 10, it is understood that
15 any other satisfactory mounting arrangement may be employed for selectively mounting stock rests 66 within the interior of storage unit 10.

Support rail 72 is located toward the rear of the interior of storage unit 10, and is adapted for use in supporting guns G1, G2 and G3 at locations above stock rests 66, 68 and 70, respectively, so as to maintain guns G1, G2 and G3 upright within the interior of
20 storage unit 10. Support rail 72 is mounted within the interior of storage unit 10 via an adjustable position mounting arrangement that enables the height of support rail 72 to be adjusted. In the illustrated embodiment, the rear corner posts C3 and C4 of storage unit 10 are provided with inverted teardrop-shaped openings 98, and a pair of studs extend outwardly from each end of support rail 72. Each stud is configured to be received within
25 the upper end of one of openings 98 and slid downwardly by application of a downward force to support rail 72, to engage the stud in the lower portion of the opening 98 in a manner as is known. In this manner, the user is able to adjust the vertical position of support rail 72 relative to the stock rest according to the configuration and height of the gun or other equipment to be supported by support rail 72. In addition, any number of support rails 72

may be positioned within the interior of storage unit 10 at different elevations, to provide a high degree of flexibility in the type of support that can be provided by support rails 72 according to the types of guns and related equipment desired to be stored within storage unit 10.

5 Each support rail 72 is preferably channel shaped, and includes an outwardly facing vertical mounting wall 100 that extends throughout the length of support rail 72 between its ends. Mounting wall 100 includes an upper set of spaced apart mounting openings 102 and a lower set of spaced apart mounting openings 104. A series of spaced retainer openings 106 are located below upper mounting openings 102, and a series of
10 spaced retainer openings 108 are located below lower mounting openings 104.

 Mounting wall 100 and mounting openings 102, 104 are adapted for use in mounting a variety of support components for use in supporting guns G1, G2 and G3, as well as accessories and other types of firearms and related equipment. Such support components include, but are not limited to, a barrel support bracket 116, a combination barrel/scope
15 bracket 118, and a pistol bracket 120.

 Barrel support bracket 116 includes a mounting plate 122 and an outwardly extending support member 124. Mounting plate 122 is formed with a pair of rearwardly extending engagement lances or tabs 126, which have the same spacing as mounting openings 102 and 104. Tabs 126 are preferably formed in a stamping operation from the
20 material of mounting plate 122 such that the material of each tab 126 is formed integrally with the material of mounting plate 122 at the upper end of each tab 126, to define a downwardly facing space between the forwardly facing surface of each tab 126 and the rearwardly facing surface of mounting plate 122. However, it is understood that any other satisfactory method of forming tabs 126 may be employed. In addition, mounting plate 122
25 includes a retainer opening 128 centered between tabs 126 and located below support member 116.

 Outwardly extending support member 124 includes a body section 130 defining an outwardly facing support edge 132, in combination with a pair of support arms 134 that extend outwardly from the opposite sides of support edge 132. Barrel support

bracket 116 is particularly adapted for use in combination with stock rest 70, and is adapted to be engaged with support rail 72 at a location at which support edge 132 is in alignment with one of openings 88 formed in support wall 86 of stock rest 70.

Barrel support bracket 116 is engaged along the length of support rail 72 by placing tabs 126 in alignment with a pair of adjacent upper openings 102 or lower openings 104 of support rail mounting wall 100. A downward force is then applied to barrel support bracket 116, such that each tab 126 is moved downwardly along the rearwardly facing surface of support rail mounting wall 100 until the upper edge of each opening 102 or 104 is brought into engagement with the upper extent of tab 126 at its connection to the material of mounting plate 122. Barrel support bracket 116 is disengaged from support rail 72 simply by reversing these steps. In this manner, barrel support bracket 116 is quickly and easily engaged with and disengaged from support rail 72, to enable barrel support bracket 116 to be located in a desired position for use in supporting a weapon such as gun G3 or for any other use, and removed when not required. When barrel support bracket 116 is mounted to support rail 72, retainer opening 128 is located in alignment with one of retainer openings 106, 108, and a retainer such as a screw or bolt is engaged within the aligned openings to prevent inadvertent removal of barrel support bracket 116 and to maintain barrel support bracket 116 in engagement in the desired location on support rail 72. The configuration of support edge 132 and support arms 134 is particularly designed to cradle the barrel of gun G3, although it is understood that barrel support bracket may be used for any other satisfactory purpose for storing a weapon or related accessories and/or equipment within storage unit 10.

Combination support bracket 118 includes a mounting plate 136 and a support member 138 extending outwardly from mounting plate 136. Mounting plate 136 is configured similarly to mounting plate 122, and includes a pair of mounting lances or tabs 140 that extend rearwardly from mounting plate 136 and a retainer opening 142 located below and centered between mounting tabs 140. Support member 138 includes a body section 144 defining an outwardly facing support edge 146 which includes a centrally located recess 148, in combination with a pair of support arms 150 that extend outwardly

from the opposite sides of support edge 146. Barrel support bracket 118 is particularly adapted for use in combination with stock rests 66 and 68, and is adapted to be engaged with support rail 72 at a location at which support edge 146 and recess 148 are in alignment with one of lower walls 76, 82 defined by respective stocks rests 66, 68 between respective
5 dividers 78, 84. When combination support bracket 118 is mounted to support rail 72, retainer opening 142 is located in alignment with one of retainer openings 106, 108, and a retainer such as a screw or bolt is engaged within the aligned openings to prevent inadvertent removal of combination support bracket 118 and to maintain combination support bracket
10 116 in engagement in the desired location on support rail 72. The configuration of support edge 146 and support arms 150 is particularly designed to cradle the midsection of one of guns G1 or G2, although it is understood that support bracket may be used for any other satisfactory purpose for storing a weapon or related accessories and/or equipment within storage unit 10. Recess 148 is configured to cradle and receive any item that is adapted to be
15 stored with or used with one of guns G1 or G2, such as the upper end of a removable barrel or a scope that is adapted to be used in combination with the gun and stored in the same location as the gun to provide ready access to both the gun and its related accessory. It is understood, however, that recess 148 may be used to receive and support any type of gun or related equipment or accessory contained within storage unit 10.

Pistol bracket 120 includes a mounting plate 152 having a mounting lance or
20 tab 154 that extends rearwardly from mounting plate 152 and a retainer opening 156 located above and centered on mounting tabs 154. Pistol bracket 120 further includes a support plate 158 that extends at an angle outwardly from the lower end of mounting plate 152. A support finger 160 extends outwardly from support plate 158, and is preferably oriented so as to be generally perpendicular to support plate 158.

25 Pistol bracket 120 may be mounted at any location along the length of support rail 72 by engaging mounting tab 154 within any one of openings 102 or 104 in support rail mounting wall 100. If desired, a hole can be formed in mounting wall 100 in alignment with retainer opening 156, and a screw can be engaged within the retainer opening and aligned hole in mounting wall 100 to maintain pistol mounting bracket 120 in position and prevent

its inadvertent removal. In use, a pistol P is supported from pistol bracket 120 by engaging support finger 160 within the barrel of pistol P. In this manner, pistol P is supported such that its butt end faces outwardly, which facilitates quick and easy removal of pistol P from pistol bracket 120. Support finger 160 is preferably coated with a resilient material such as vinyl or the like, to prevent scratching or marring of the pistol barrel.

While barrel support bracket 116, combination support bracket 118 and pistol bracket 120 are shown and described as the support components that are secured to support rail 72 to mount weapons, accessories and other equipment within the interior of storage unit 10, it is understood that such support components are illustrative of many different types of support components that may be used. It is contemplated that the same type of removable engagement system may be employed to mount support components having any variety of designs and configurations adapted to support any type of weapon, accessory or related equipment.

Bin assembly 72 may be mounted within the interior of storage unit 10 for storing optics, flashlights, removable stocks or barrels, bayonets, cases, holders, supports or other weapon-related equipment or accessories. Bin assembly 72 includes a pair of bin side walls 164, each of which may be reinforced by a stiffener 166 that extends throughout the length of the bin side wall 164. Bin assembly 72 further includes a fixed-position bottom shelf 168 which extends between and is secured to the lower ends of side walls 64. Bottom shelf 168 includes front and rear depending support sections 170, 172, respectively, that extend downwardly from the front and rear edges, respectively, of bottom shelf 168. Support sections 170, 172 are spaced apart from each other a distance slightly greater than the depth of stock rests 66, 68 and 70, and have a height slightly greater than that of stock rests 66, 68 and 70. In this manner, bin assembly 72 can be installed over any of stock rests 66, 68 and 70 that are located in the bottom of the interior of storage unit 10. Alternatively, it is understood that the stock rest employed in a storage unit 10 having a bin assembly 72 may only have a length that extends to the side of the bin assembly 72, since the portion of the stock rest below the bin assembly is unusable.

Each of support sections 170, 172 has a flange formed at its lower end that is adapted to rest on lower wall 90 of storage unit base 12. Each flange has openings which are adapted to be in alignment with openings formed in lower wall 90, and screws or other satisfactory fasteners are engaged within the aligned openings to secure the lower end of bin assembly 72 in position within the interior of storage unit 10. At the upper end of bin assembly 72, each bin side wall 164 is formed with a flange that is adapted to be positioned adjacent an upper wall 174 defined by storage unit top 14. Each flange has openings which are adapted to be in alignment with openings formed in upper wall 174, and screws or other satisfactory fasteners are engaged within the aligned openings to secure the upper end of bin assembly 72 in position within the interior of storage unit 10. It is understood that the described arrangement for mounting bin assembly 72 in the interior of storage unit 10 is illustrative, and that any other type of mounting arrangement may be employed.

A series of shelves 176 are adapted to be engaged with and span between bin assembly side walls 164 above bottom shelf 168. Preferably, the position of each shelf 176 can be adjusted along the height of the side walls 164. To accomplish this, each side wall 164 includes a series of vertically spaced front shelf mounting members 178a and rear shelf mounting members 178b. In the illustrated embodiment, shelf mounting members 178a, 178b are formed in a stamping operation from an inwardly deformed portion of the material of side wall 164, with open areas located above and below the shelf mounting member. Each shelf 176 includes a front mounting ear 180a on each of its sides and a rear mounting ear 180b on each of its sides. In the illustrated embodiment, each shelf 176 includes a pair of side flanges 182, and mounting ears 180a and 180b are formed from a portion of the material of each side flange 182, having a configuration adapted to be engaged with one of shelf mounting members 178a, 178b, respectively. With this construction, each shelf 176 is engaged with bin assembly side walls 164 by positioning mounting ears 180a, 180b vertically above shelf mounting members 178a, 178b, respectively, and applying a downward force to the shelf 176 to engage the mounting ear with the shelf mounting member. Any desired number of shelves can be engaged with side walls 164 in any position

along the length of the side walls 164, according to the dimensions and configuration of the items adapted to be supported by the shelves 176.

With the construction of storage unit 10 as shown and described, it can be appreciated that the storage unit 10 may be assembled and configured to store a wide variety of weapons and related accessories and equipment in any desired combination and configuration. The user is able to utilize any one of the stock rests according to the type of long gun to be stored within the storage unit, and can use one, two or any other number of support rails 72 to secure any type of support component or bracket to support the upper area of the long gun or any other accessory, either alone or in combination with one of the stock rests. The user can also use one or more bin assemblies to store other related equipment and accessories if desired, or the entire interior of the storage unit 10 may be occupied by bin assemblies. In other words, the interior of storage unit 10 may be configured in any manner as desired, to provide the user with a high degree of flexibility in the types of and arrangement of the weapons that can be accommodated within the interior of the storage unit. In addition, the configuration of the storage components of the storage unit may be rapidly and easily changed in the event there is a change in the types or configuration of equipment to be stored within the storage unit. The locking mechanism provides a quick, easy and reliable means to easily lock and unlock the storage unit, and the bi-fold recess door arrangement enables the doors to be quickly and easily moved out of the way when it is desired to access the contents of the storage unit.

13
CLAIMS

We claim:

1. A storage unit, comprising:

a storage member defining an interior and an open front that provides access to the interior;

a bifold door arrangement including a first pair of pivotably interconnected
5 door sections and a second pair of pivotably interconnected door sections, wherein each pair of door sections includes an inner door section and an outer door section, wherein the first and second pairs of door sections are movable between a closed position preventing access to the interior of the storage member and an open position which provides access to the interior of the storage member through the open front of the storage member, wherein the inner
10 sections of the first and second pairs of door sections are located adjacent each other when the first and second pairs of door sections are in the closed position; and

a single-point locking arrangement interconnected with the first and second pairs of door sections, wherein the locking arrangement includes first and second movable lock control members and first and second lock mechanisms interconnected with the first and
15 second lock control members, respectively, wherein the first and second lock control members are movable between an operative latching position for placing the first and second locking mechanisms, respectively, in a locking position in which the first and second locking prevent movement of the first and second pairs of door sections, respectively, away from the closed position, and a release position in which the first and second lock control members are
20 operable to place the first and second locking mechanisms, respectively, in an unlocked position for allowing movement of the first and second pairs of door sections, respectively, away from the closed position toward the open position, wherein the first and second lock control members define retainer positions that are located adjacent each other when the first and second lock control members are in the locking position;

25 wherein the retainer portions of the lock control members are adapted to be engaged by a lock member for selectively maintaining the lock control members in the locking position.

2. The storage unit of claim 1, wherein the lock control members are located on an outside defined by the door sections and the locking mechanisms are located on an inside defined by the door sections.

3. The storage unit of claim 2, wherein the first lock control member and the first locking mechanism are mounted to the inner door section of the first pair of pivotably interconnected door sections and the second lock control member and the second locking mechanism are mounted to the inner door section of the second pair of pivotably interconnected door sections.

4. The storage unit of claim 1, wherein the storage member includes guide channels that are operable to guide movement of the first and second pairs of door sections between open and closed positions, and wherein the first and second locking mechanisms include locking members that are engageable within the guide tracks to prevent movement of the first and second pairs of door sections away from the closed position.

5. A storage unit, comprising:

a storage member defining an interior and an open front that provides access to the interior;

a bifold door arrangement including a first pair of pivotably interconnected door sections and a second pair of pivotably interconnected door sections, wherein each pair of door sections includes an inner door section and an outer door section, wherein the first and second pairs of door sections are movable between a closed position preventing access to the interior of the storage member and an open position which provides access to the interior of the storage member through the open front of the storage member, wherein the inner door section and the outer door section of each pair of door sections are located adjacent each other when the pair of door sections are in the open position;

a recess defined by the storage member located in alignment with the inner and outer door sections of each pair of door sections; and

an extension and retraction mechanism interconnected with the outer door section of each pair of door sections, wherein the extension and retraction mechanism is adapted to retract each pair of door sections into one of the recesses when the door sections

are in the open position, and to enable the pair of door sections to be moved outwardly relative to the recess to enable the door sections to be moved to the closed position.

6. A storage system, comprising:

a storage member defining an interior and an open front;

a series of differently configured support components; and

a releasable mounting arrangement associated with the support components

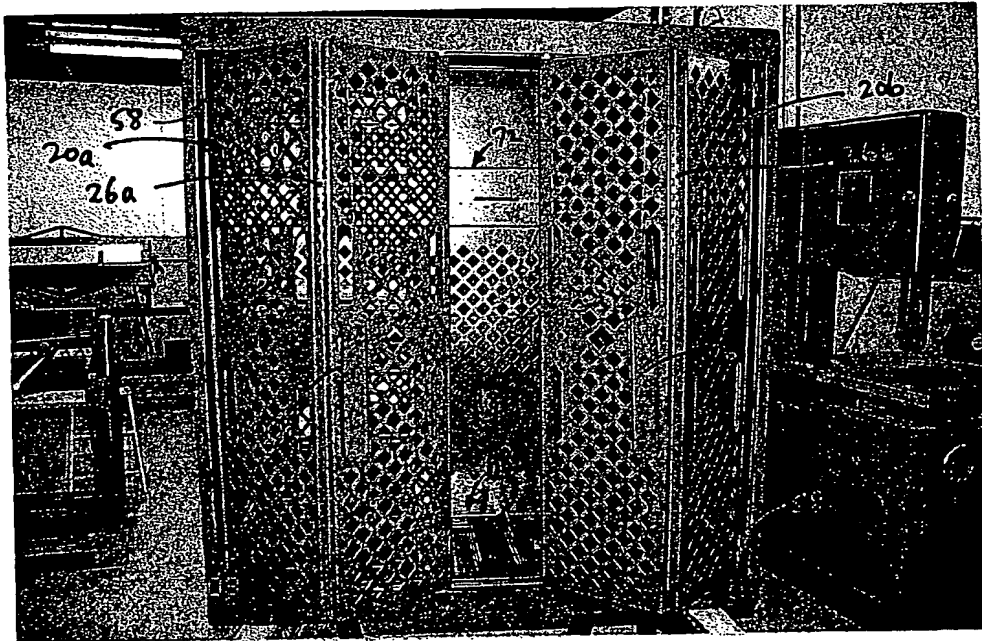
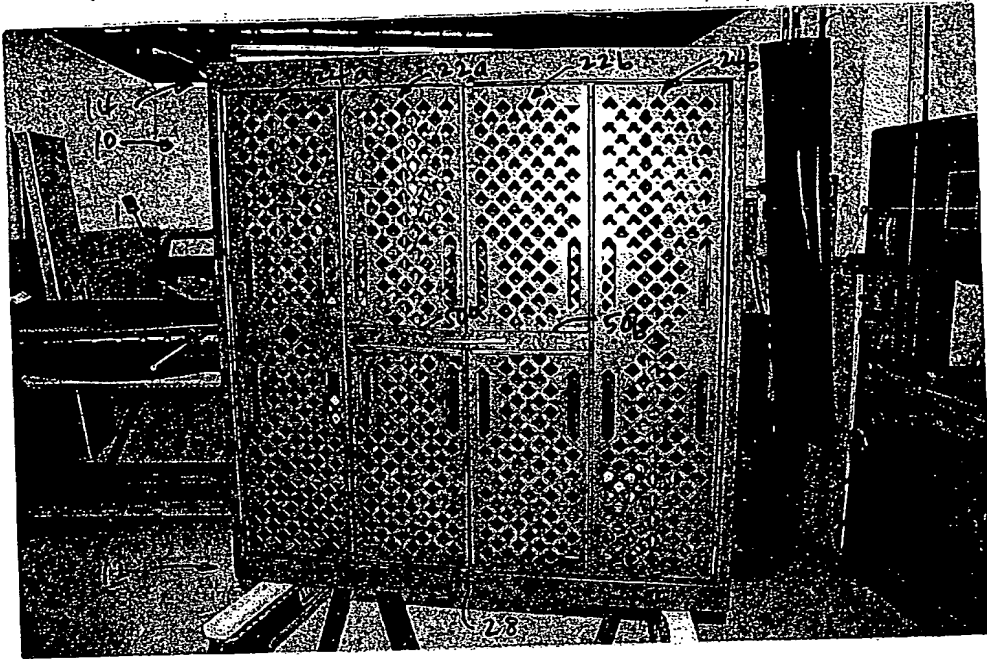
5 and the storage member for releasably mounting the support components within the interior of the storage member, wherein the support components can be mounted to the storage member in a variety of combinations and configurations to accommodate different items to be stored in the storage member.

7. The storage system of claim 6, further comprising a door arrangement movable between a closed position for preventing access to the open interior of the storage member and an open position for enabling access to the open interior of the storage member.

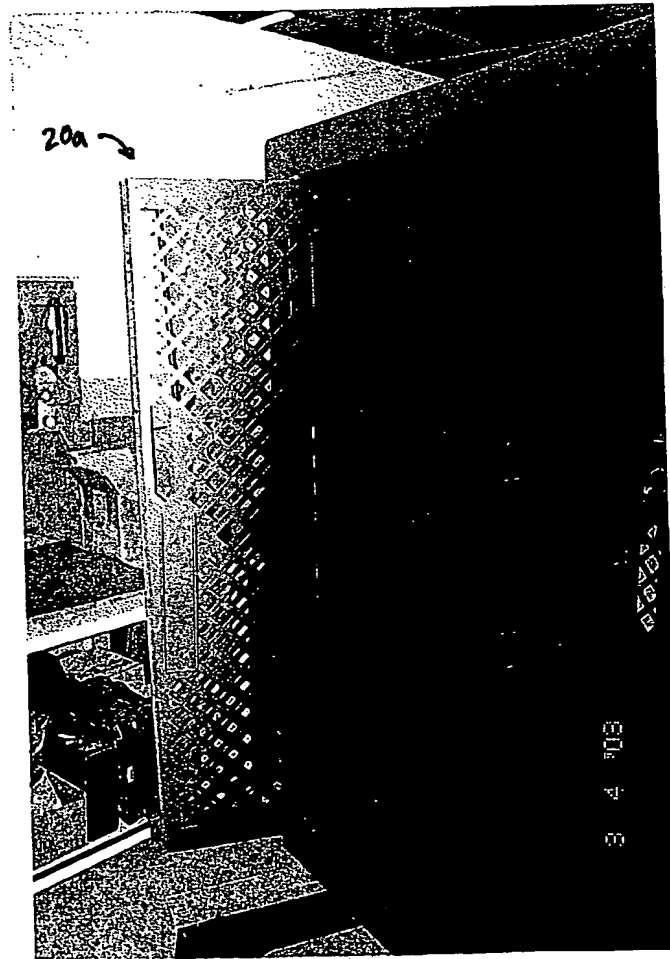
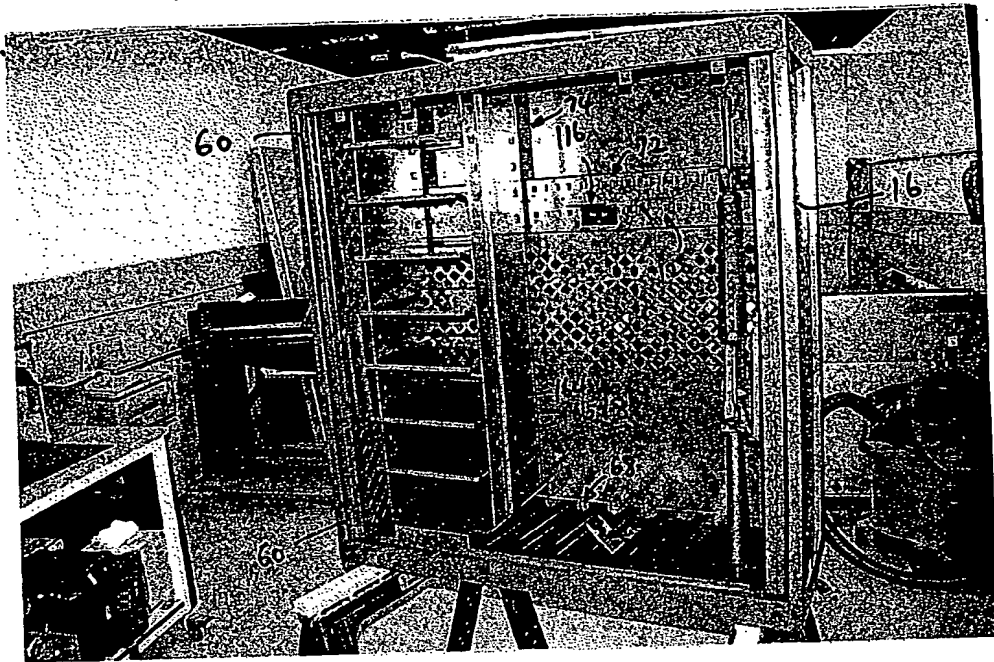
8. The storage system of claim 7, wherein the storage member includes a rear area within which a support rail is mounted, and wherein the storage member is adapted to store weapons and related accessories and equipment, wherein the differently configured support components include a series of differently configured stock rests adapted for

5 engagement within a lower area defined by the storage member for supporting the butt ends of a series of differently configured guns; and a series of differently configured support brackets engageable with the support rail, wherein each of the differently configured support brackets is configured to support an upper area of a weapon supported at the butt end by one of the stock rests.

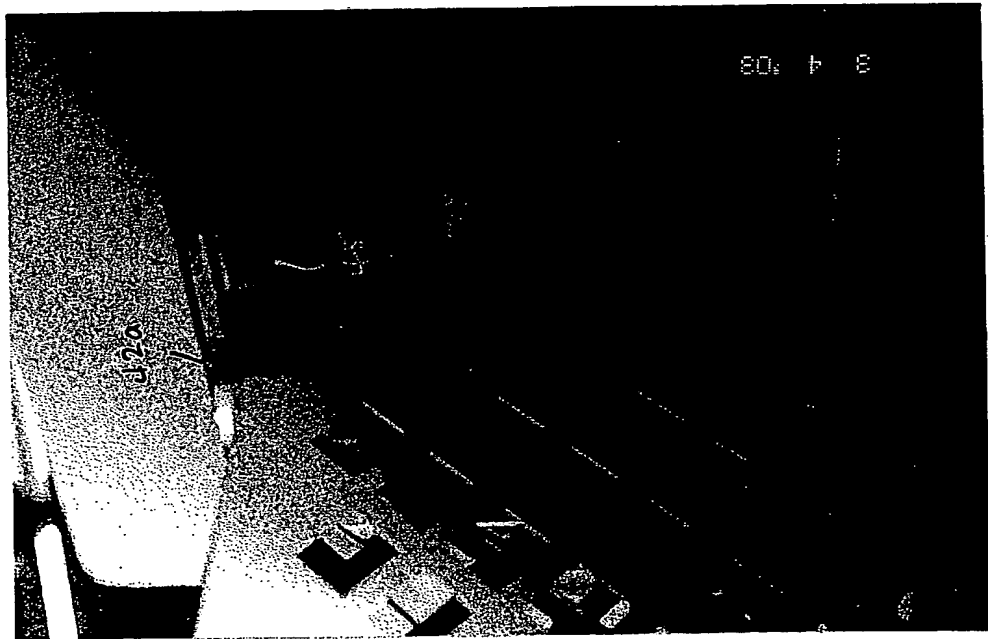
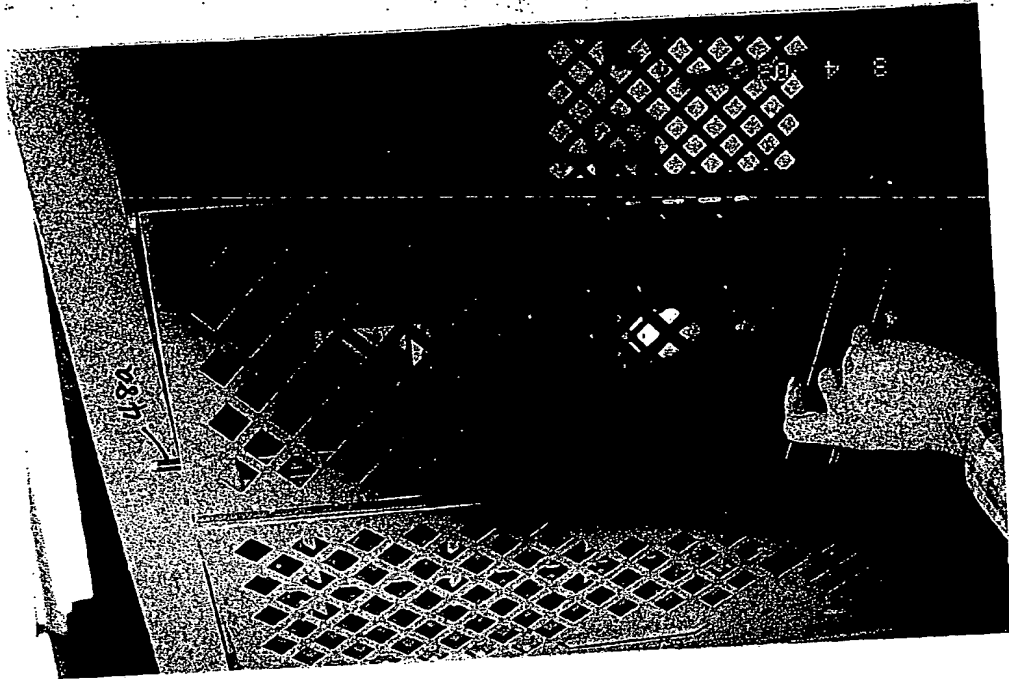
60457231 .032503



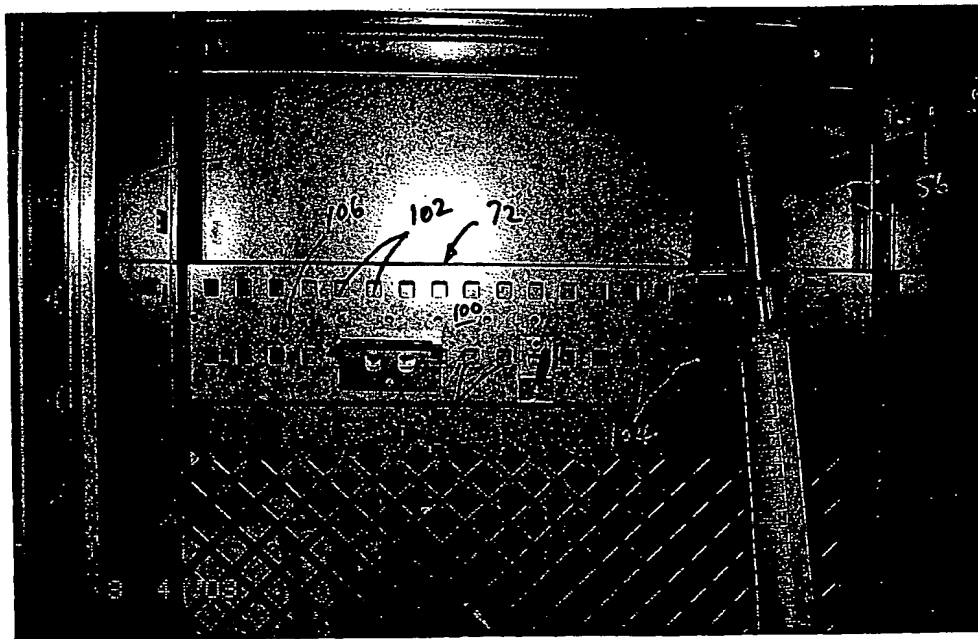
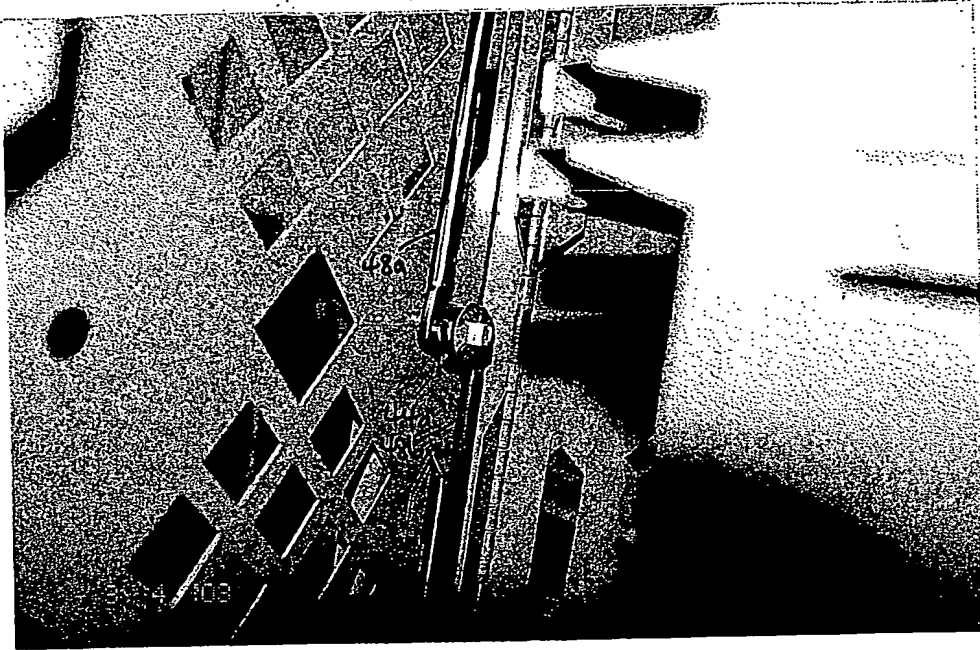
60457231 . 032503



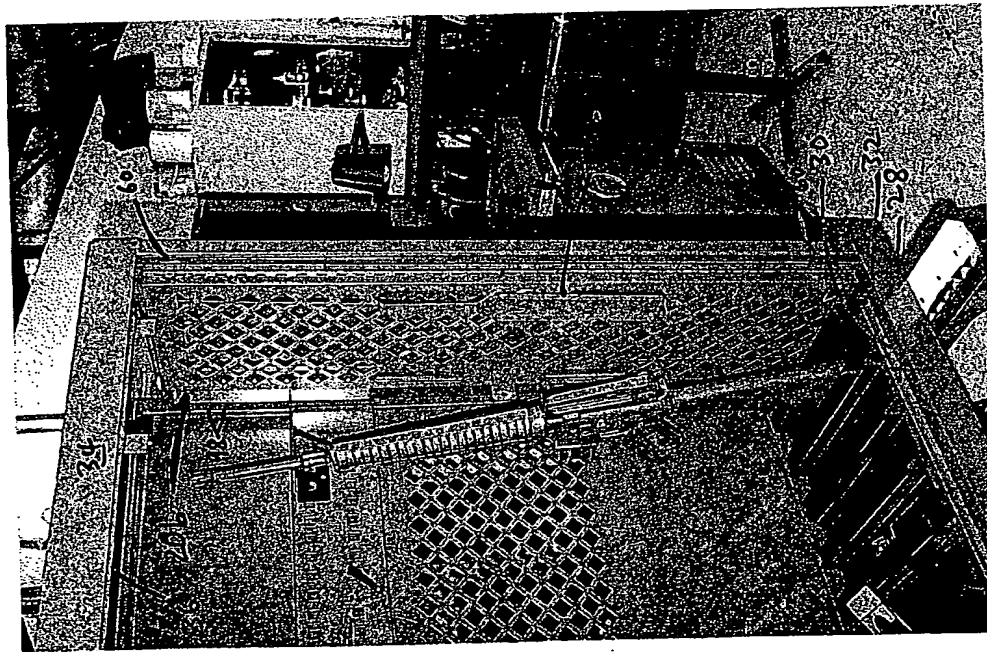
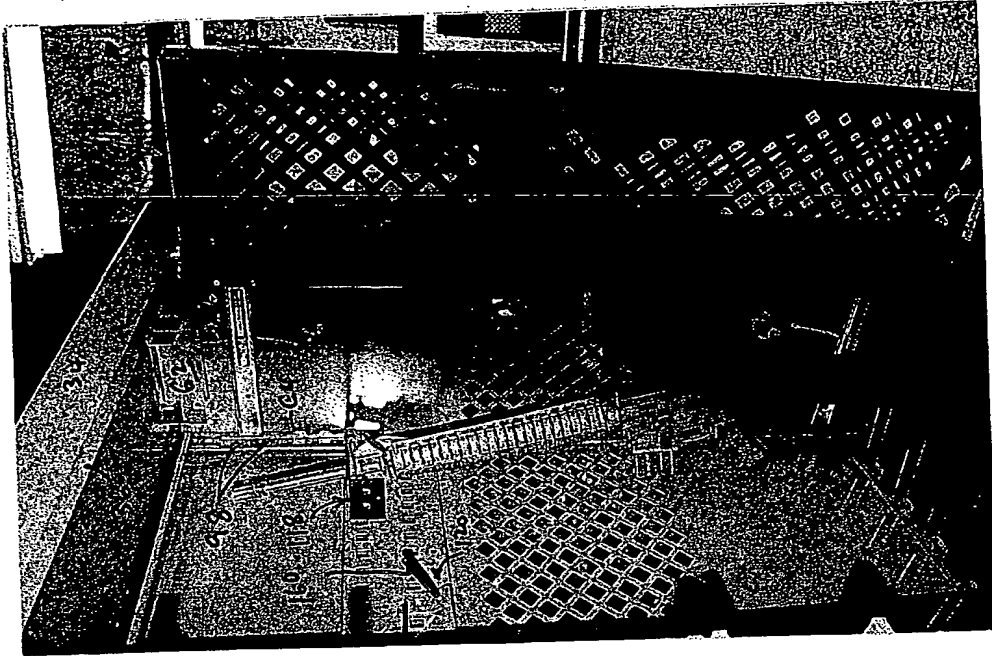
60457231.032503



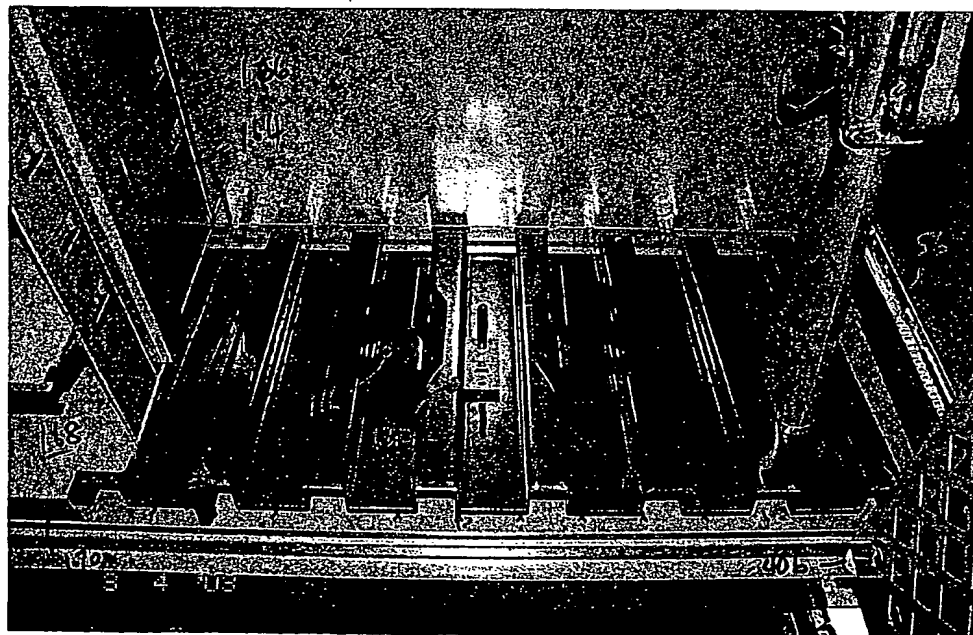
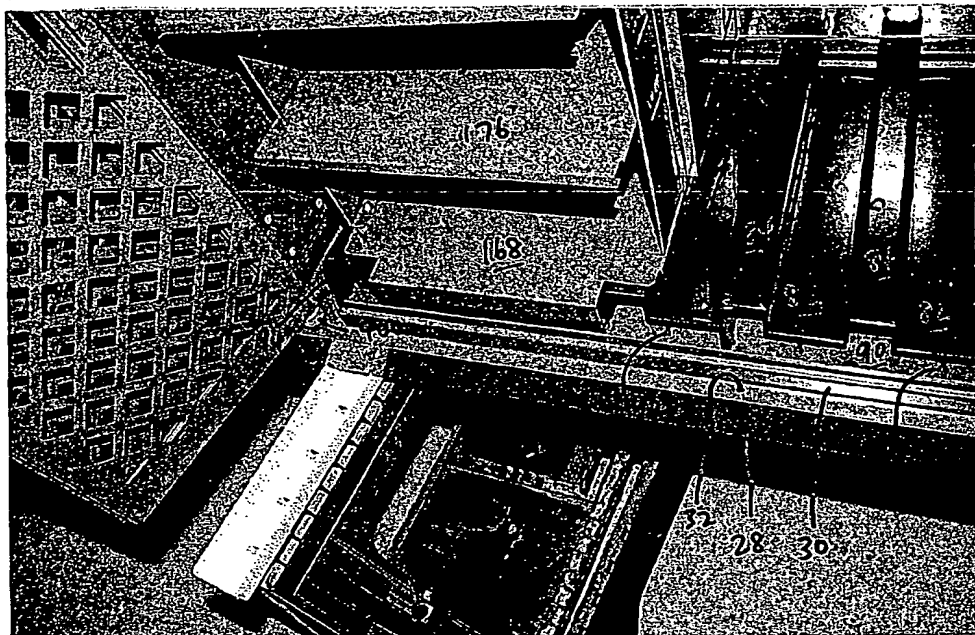
60457231 .032503



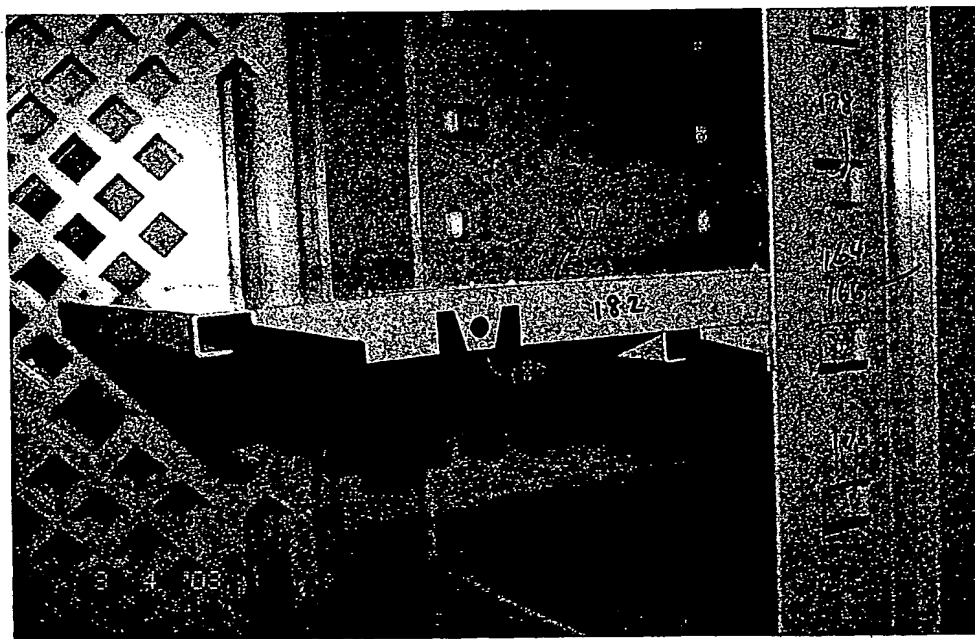
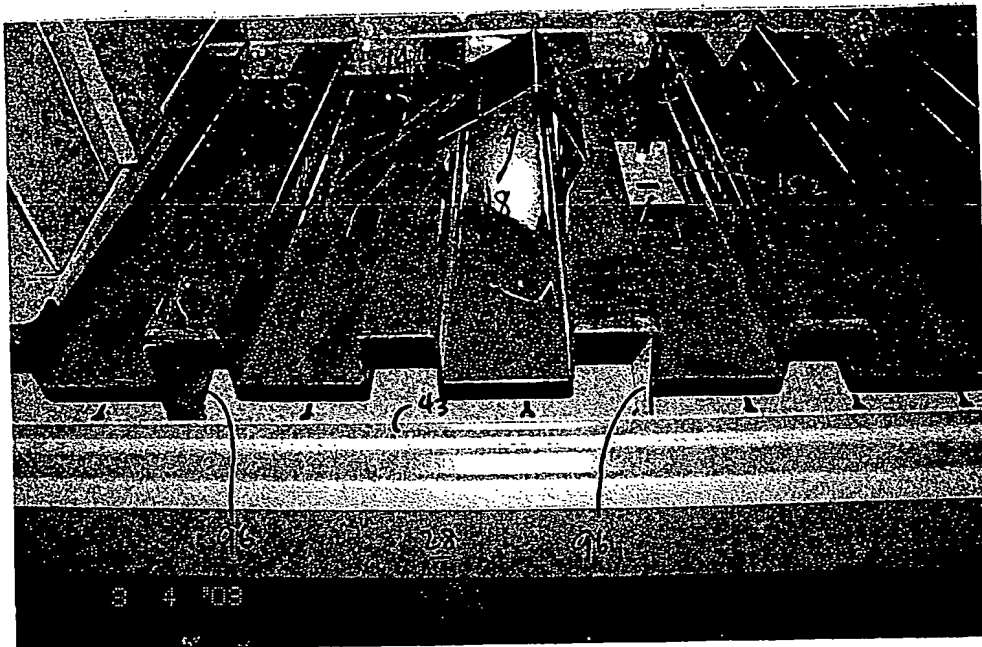
60457234 . 032503



60457231 .032503



60457231.032503

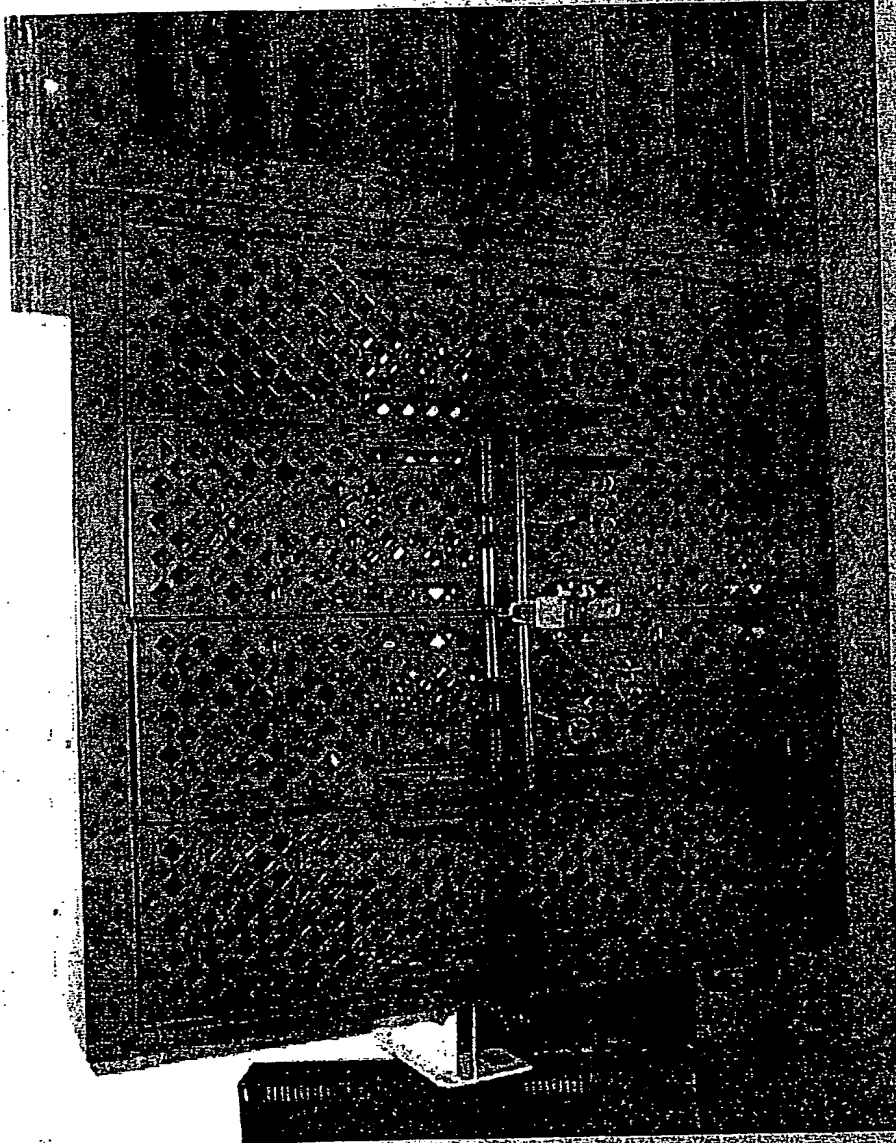




60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



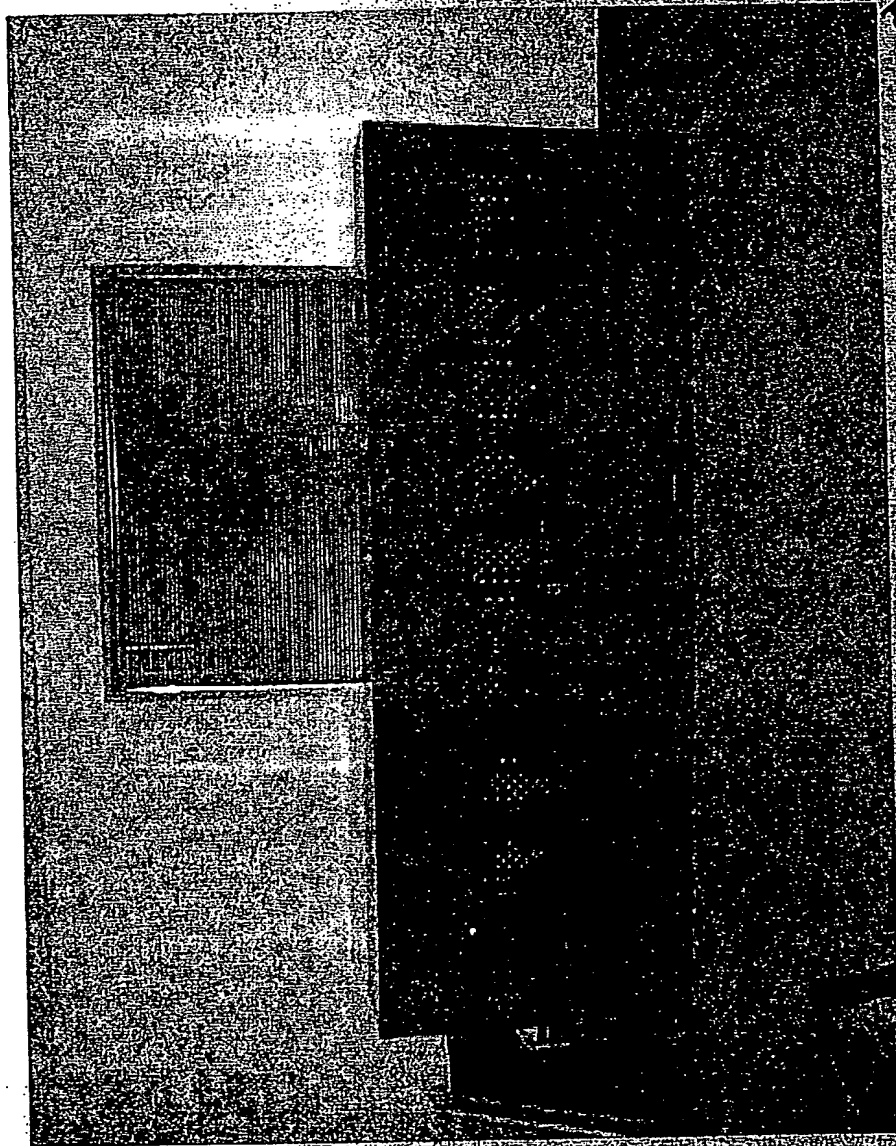
 Spacesaver

1



STORAGE SYSTEMS

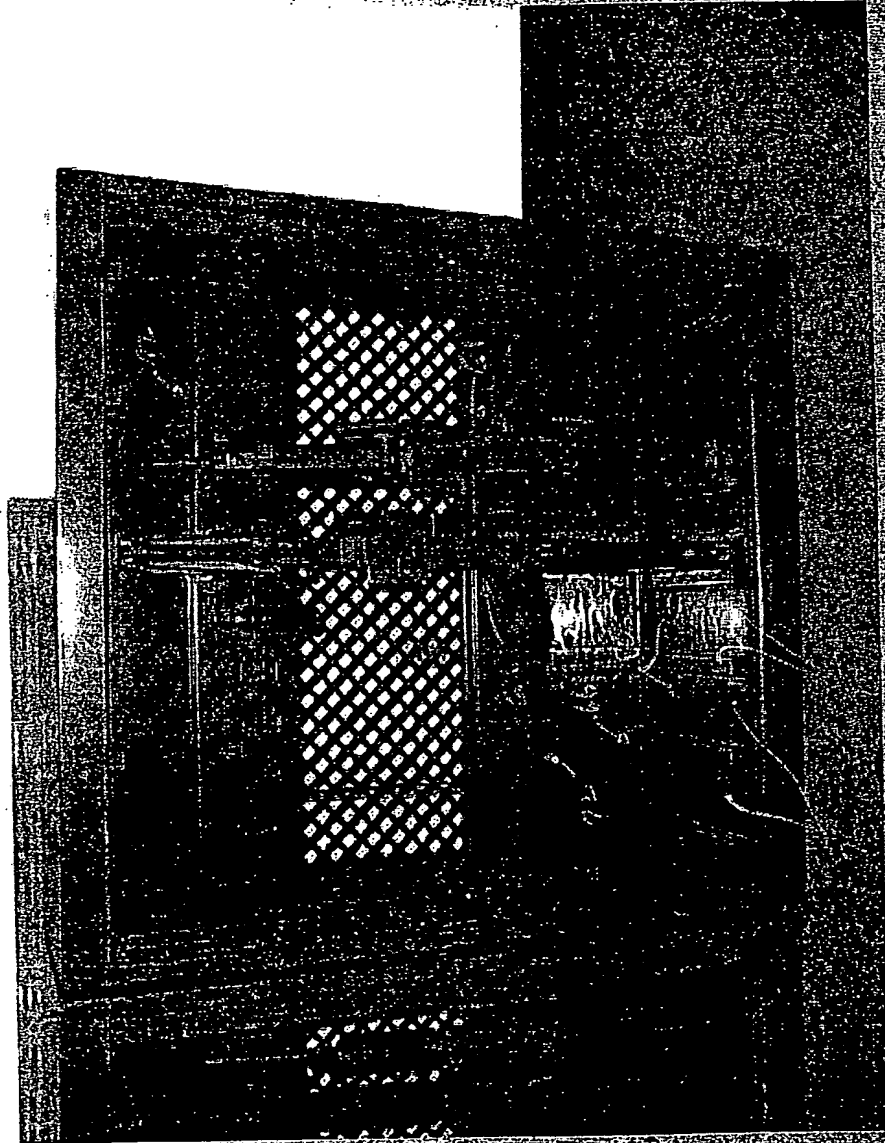
Universal Weapons Rack



Spacesaver

STORAGE SYSTEMS

Universal Weapons Rack



 Spacesaver

3

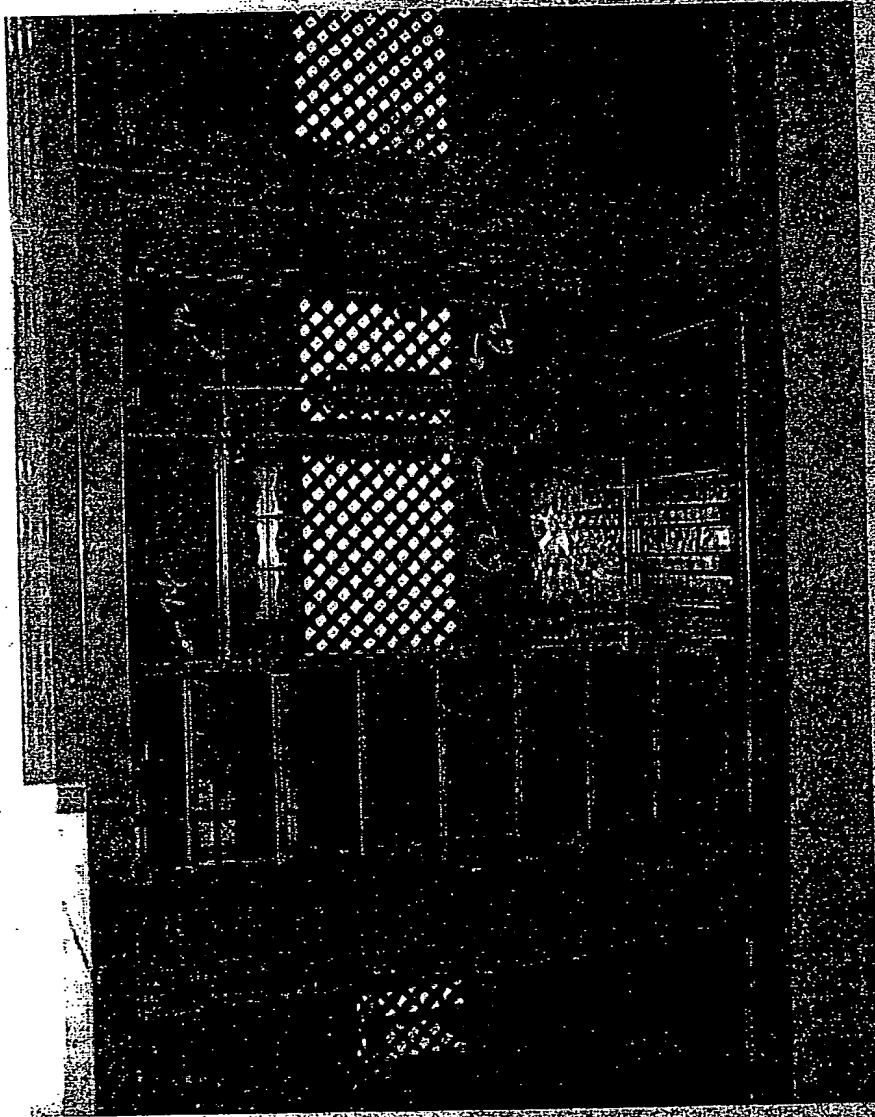


60457231 .032503

60457231 .032503

STORAGE SYSTEMS

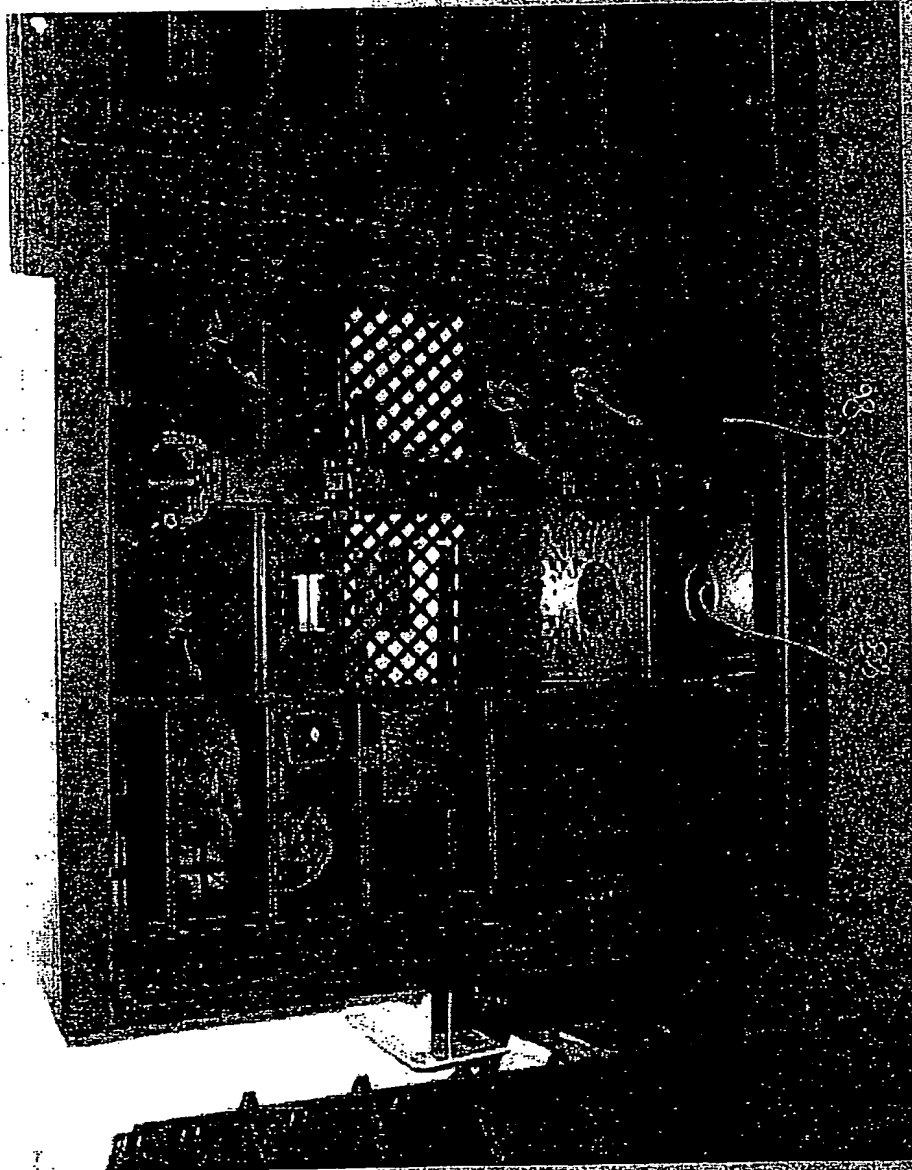
Universal Weapons Rack



 Spacesaver

STORAGE SYSTEMS

Universal Weapons Rack



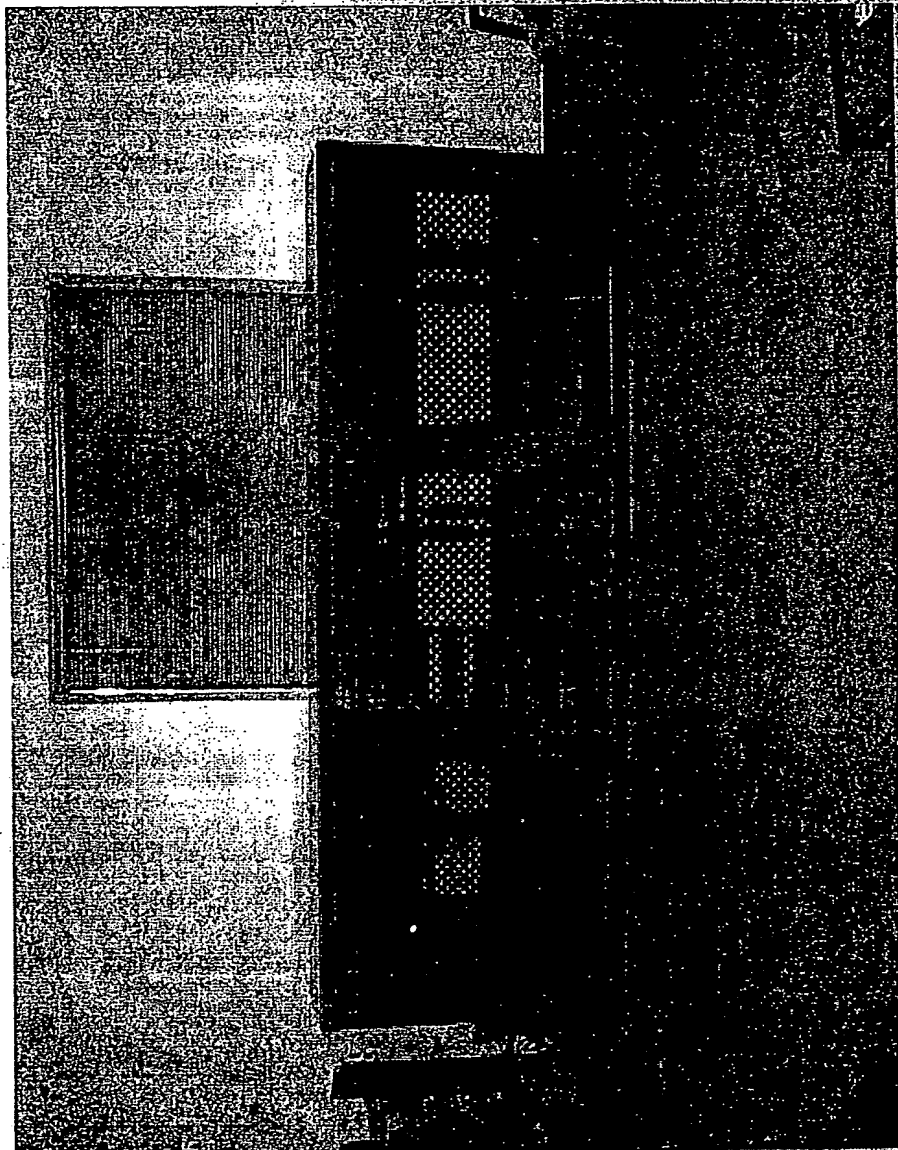
5

Spacesaver

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



SpaceSaver

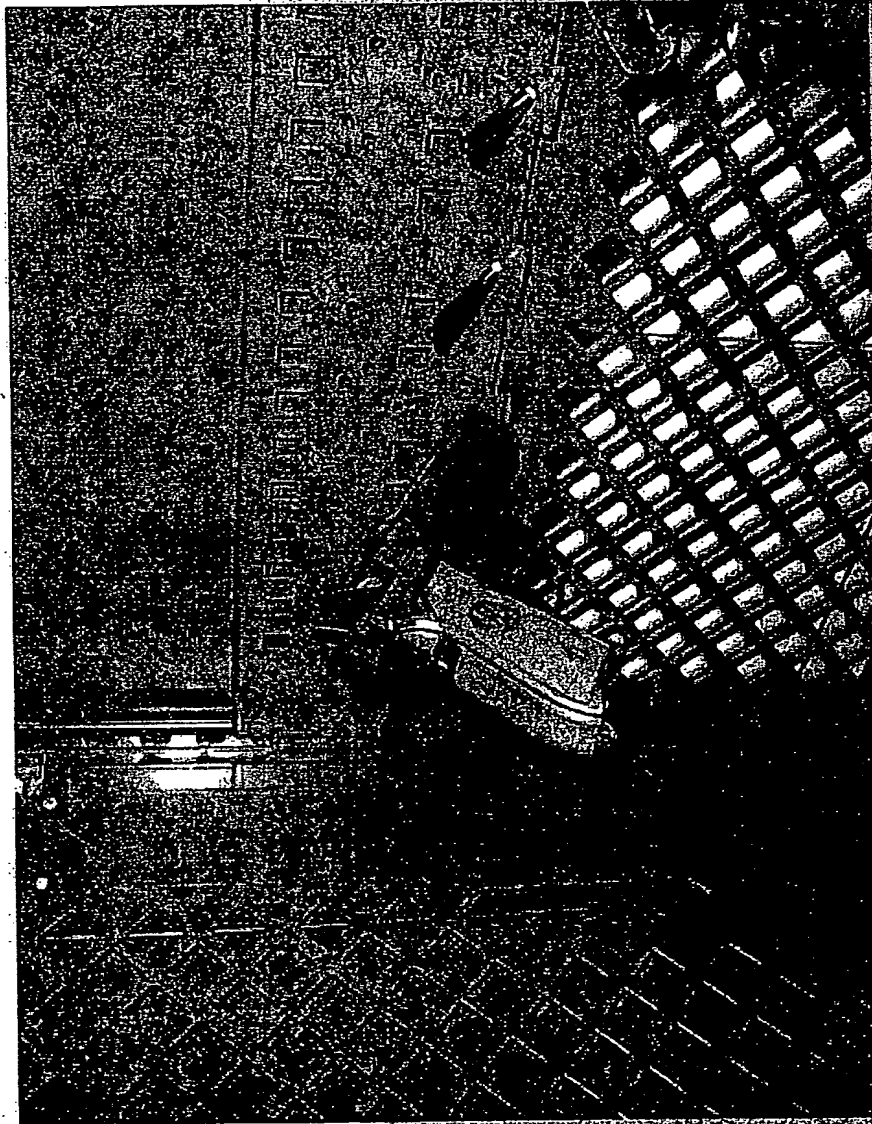
6



60457231 .032506

STORAGE SYSTEMS

Universal Weapons Rack



 Spacesaver

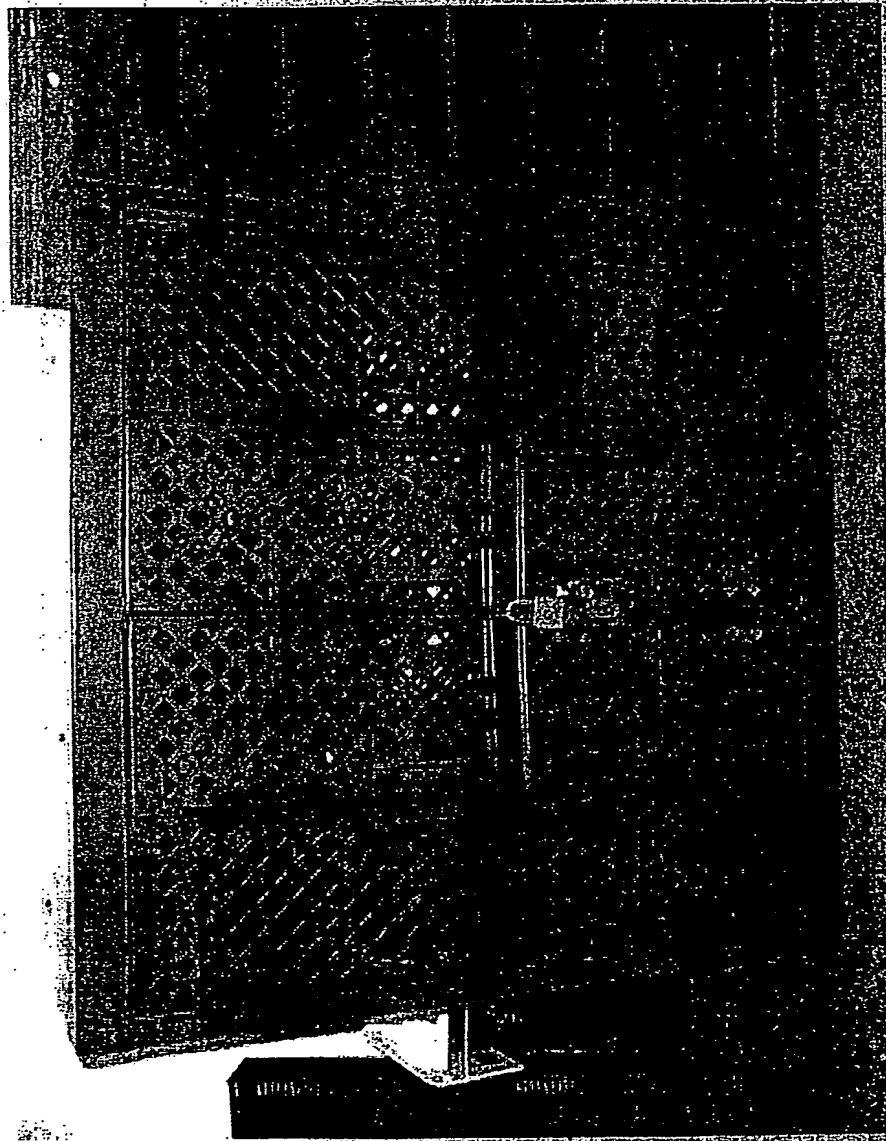
7

 Sun

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



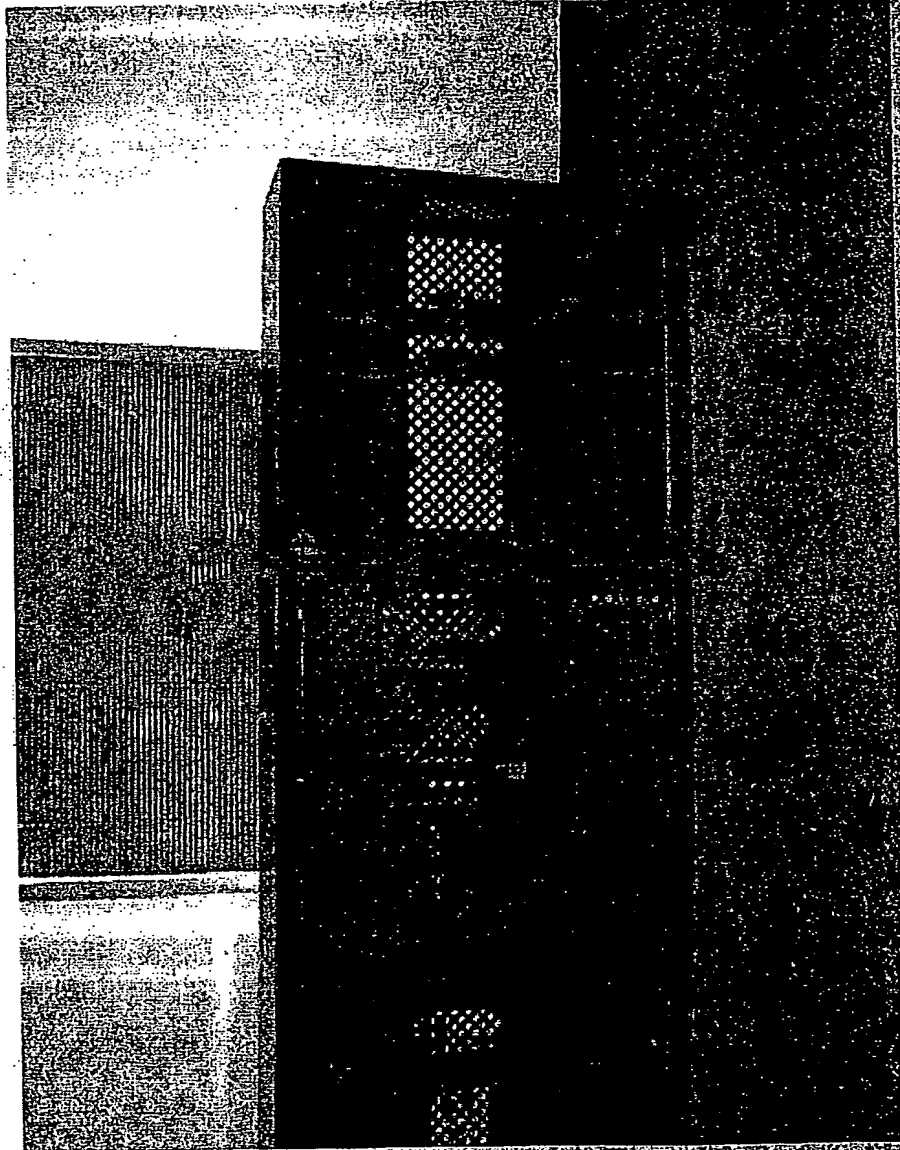
 Spacesaver

8

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



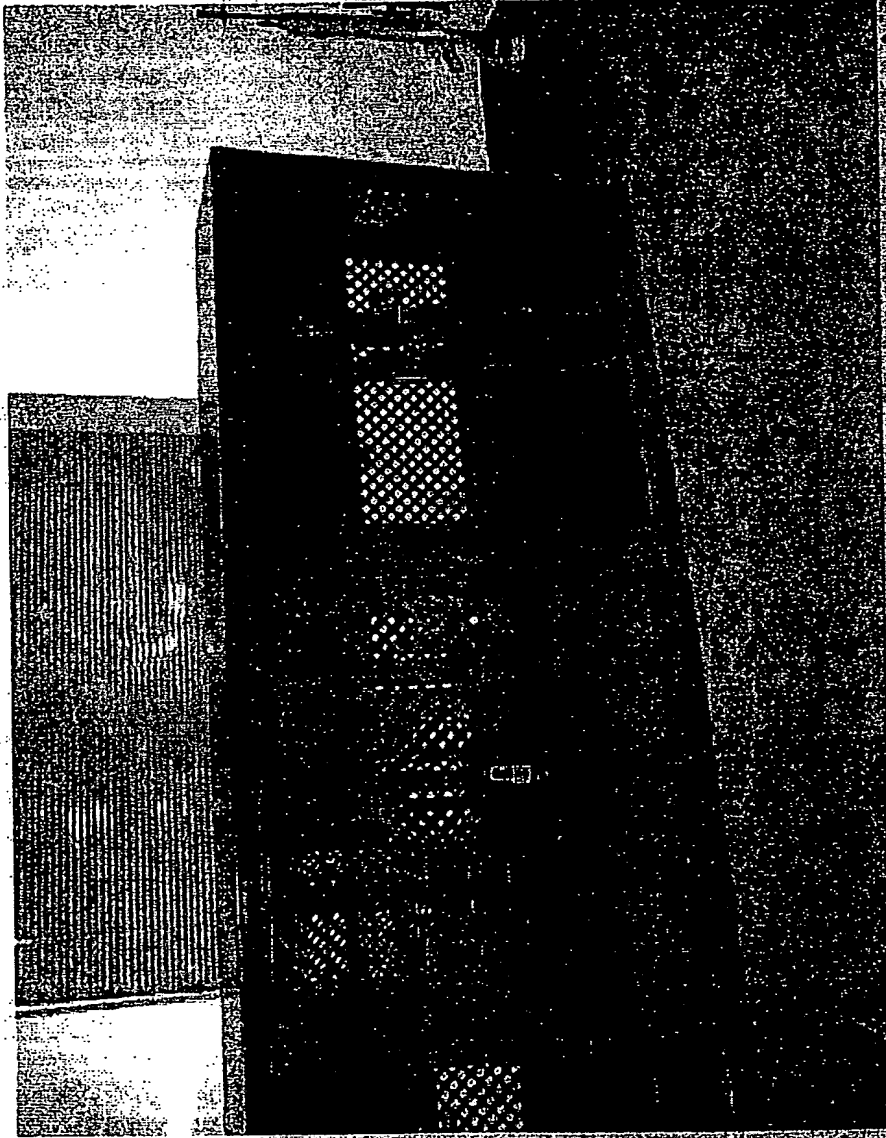
Spacesaver

9

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



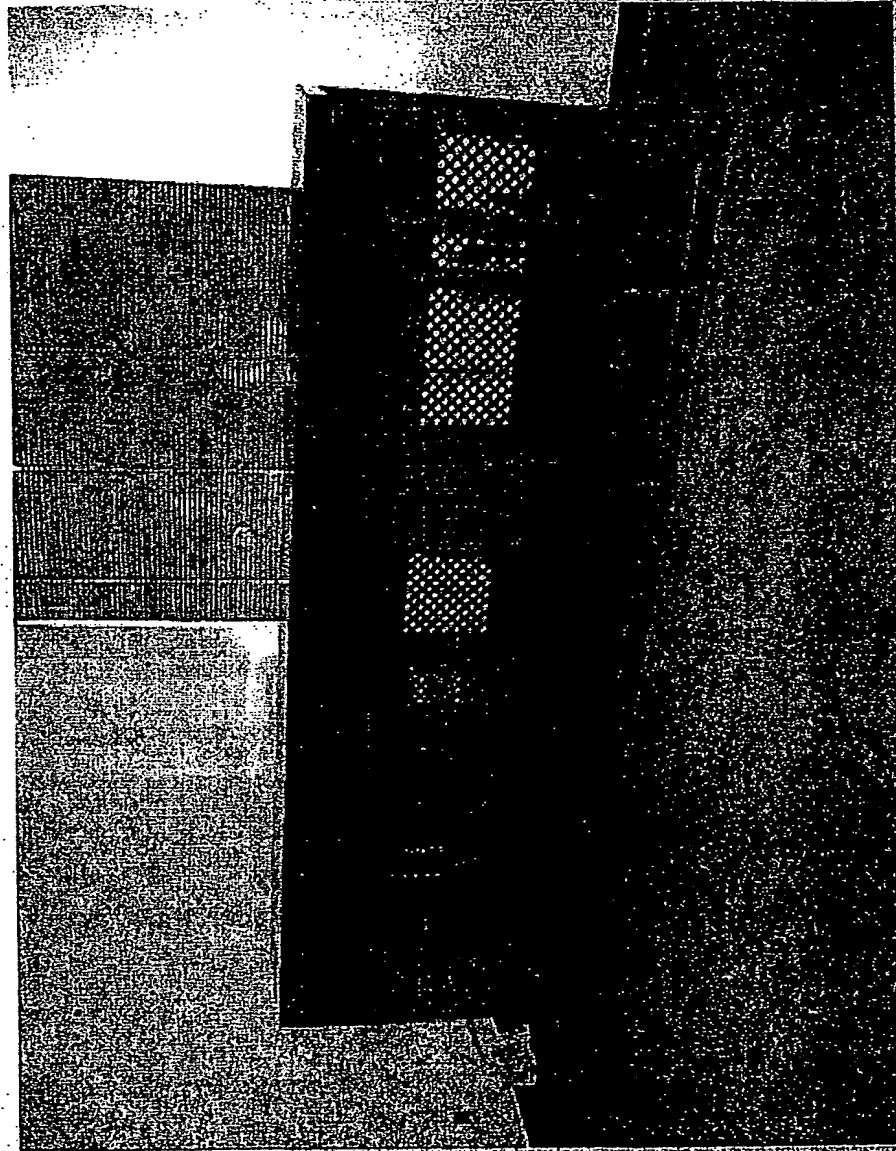
10

spacesaver

60457234 .032503

STORAGE SYSTEMS

Universal Weapons Rack



11



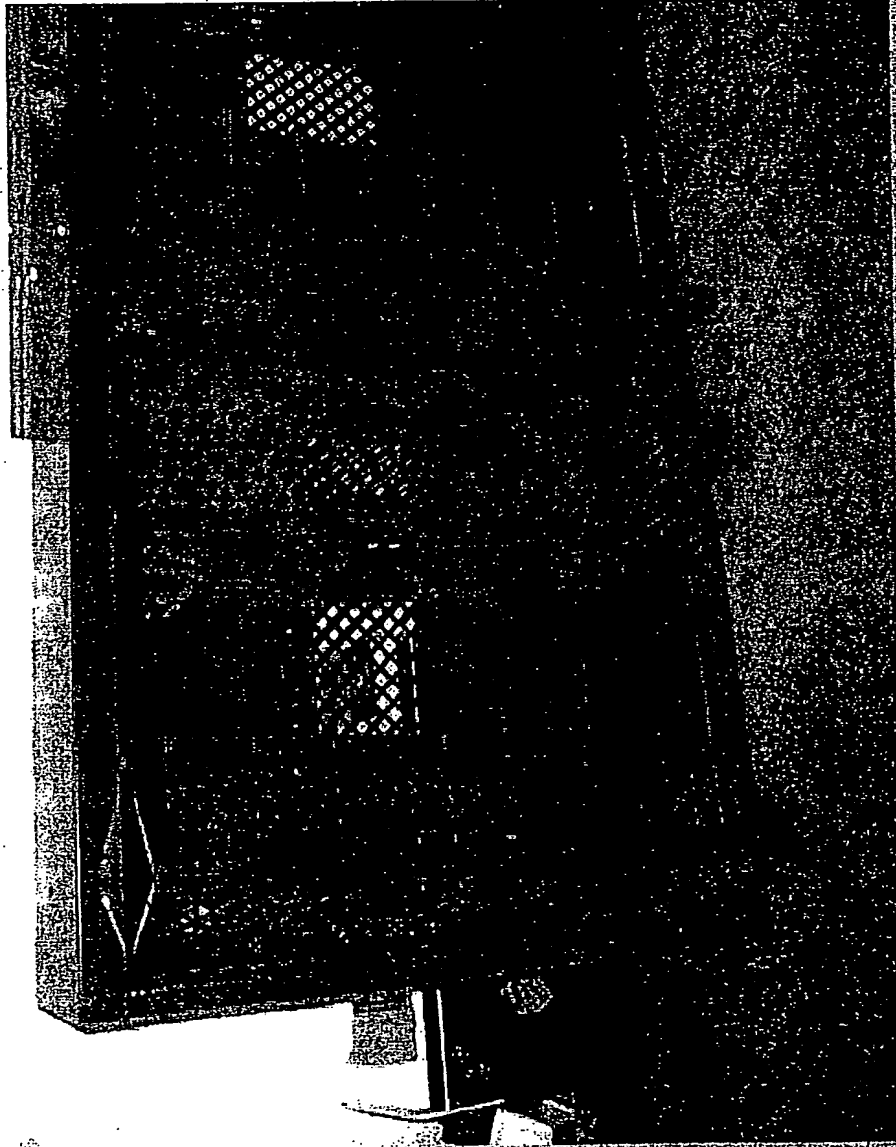
Spacecover



60457231.032503

STORAGE SYSTEMS

Universal Weapons Rack



spacesaver

12

60457231 . 032504

STORAGE SYSTEMS

Universal Weapons Rack



13

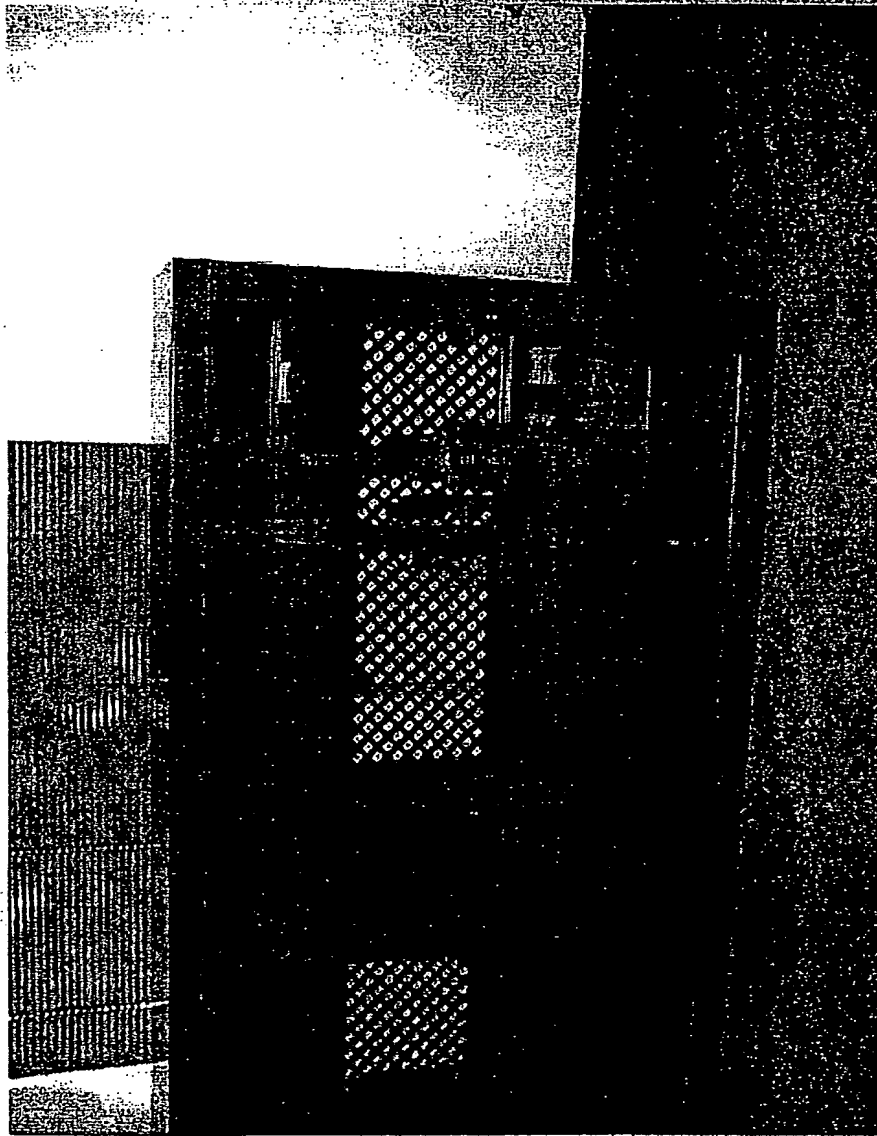


Spacesaver

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



 Spacesaver

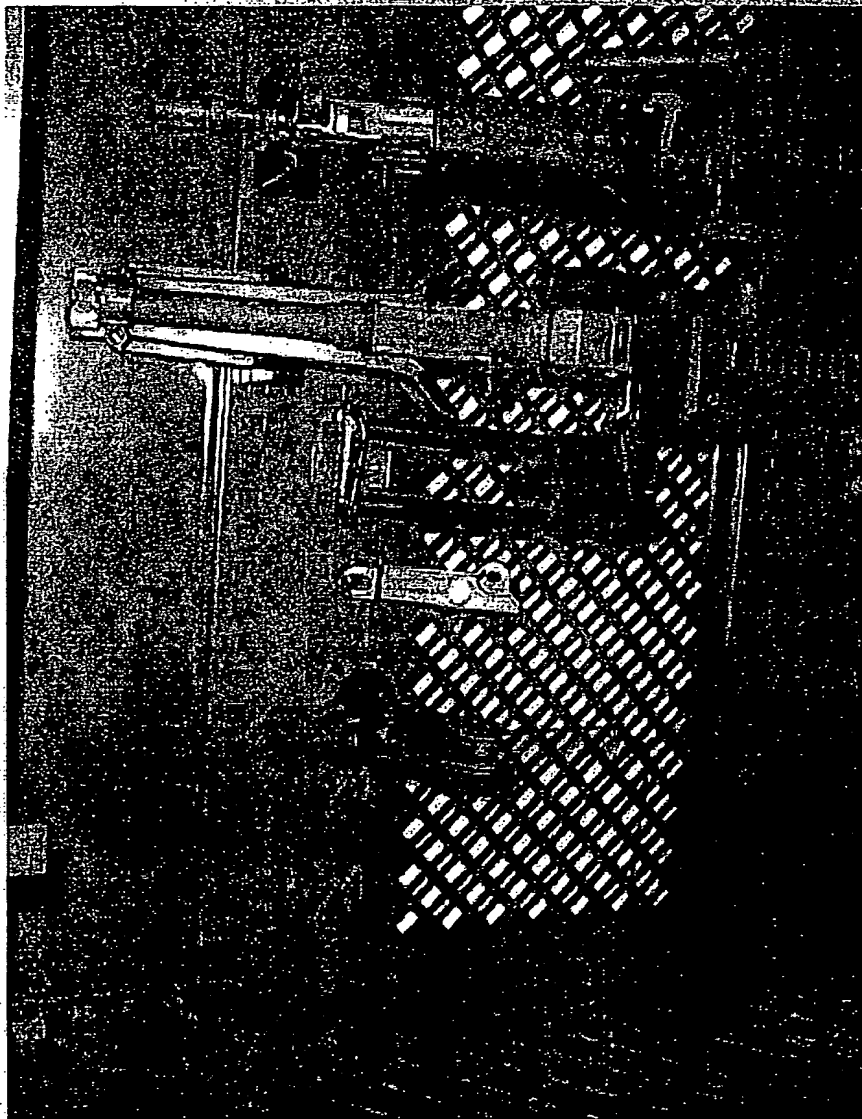
14



60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



15

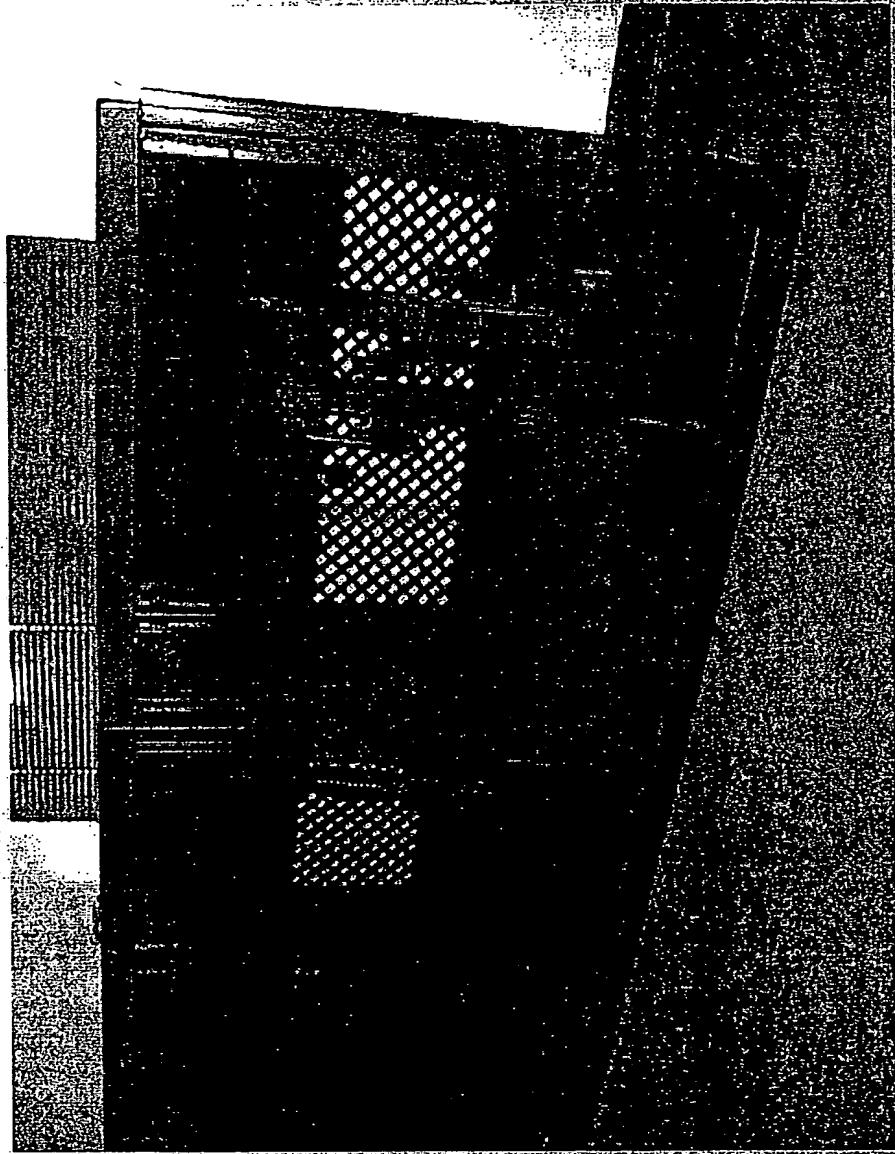



Spacesaver

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



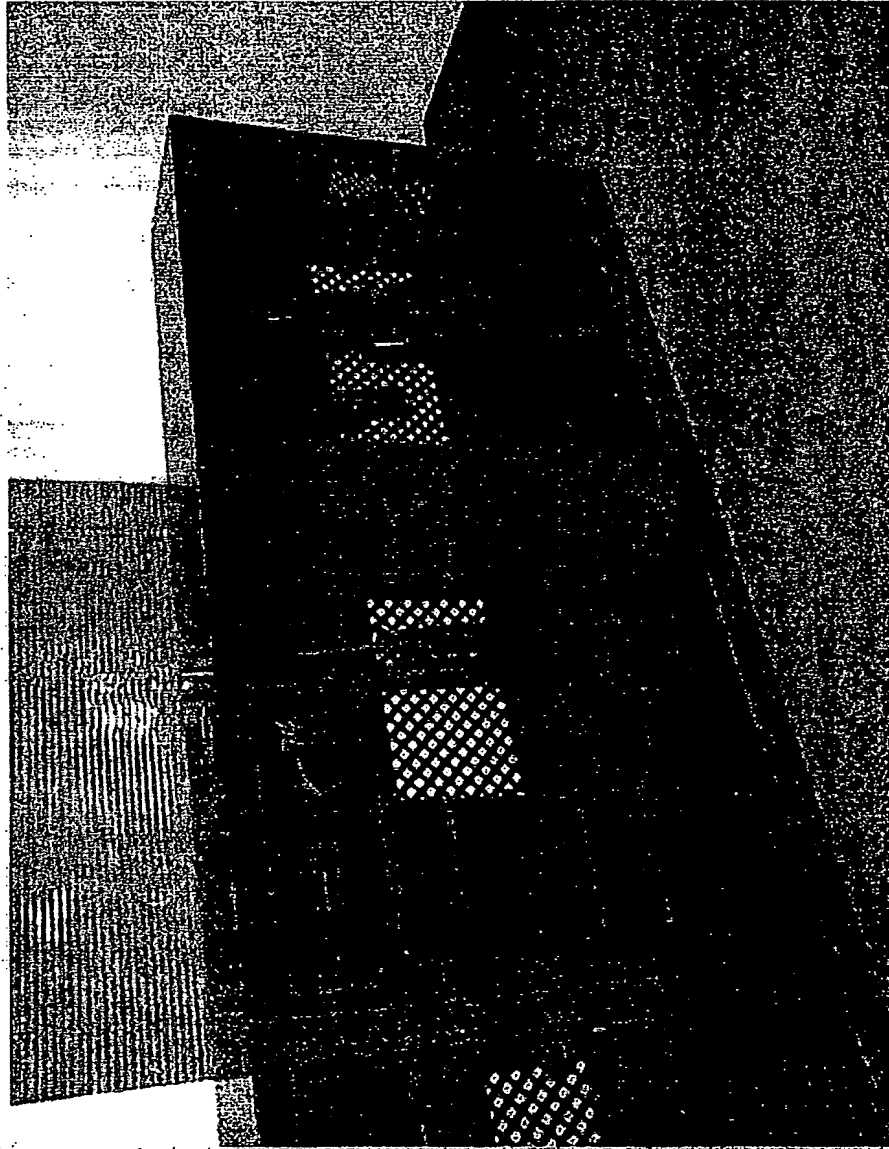
 **SpaceSaver**

16

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



Spacesaver

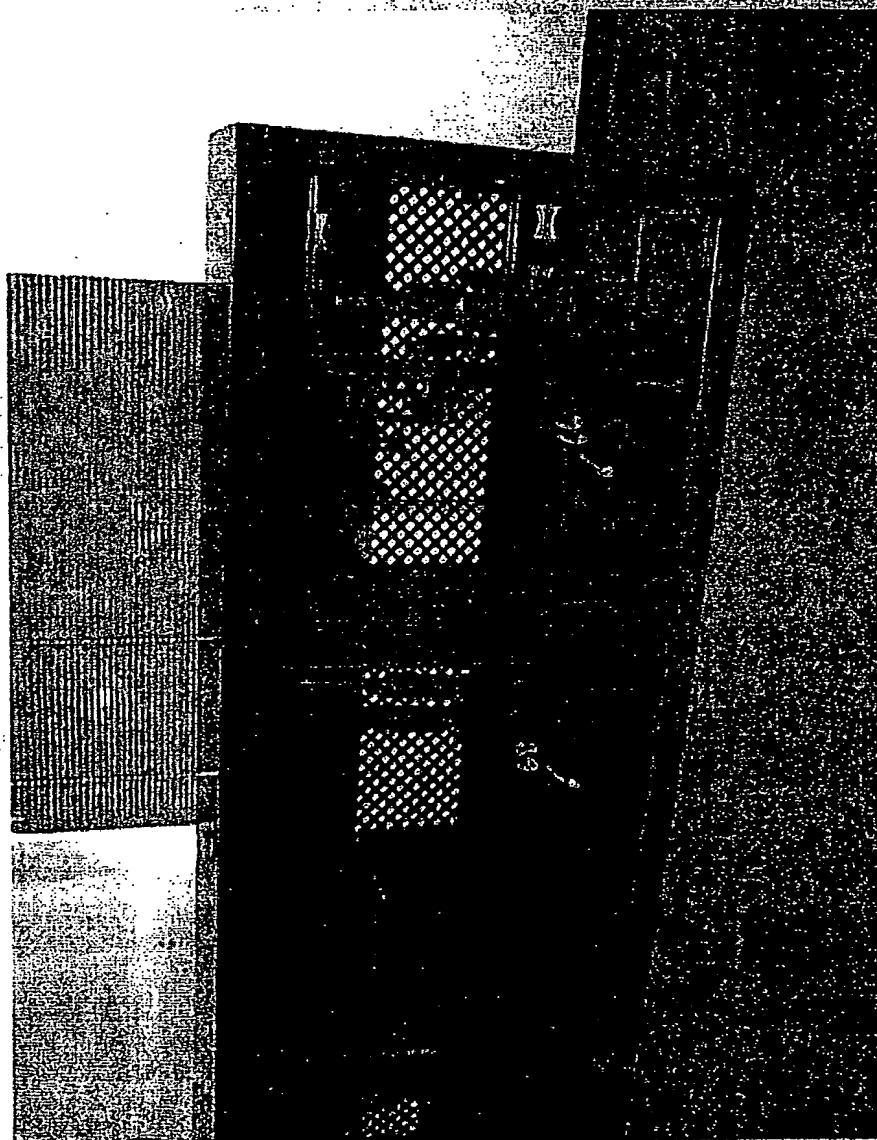
17



60457231 .032503

STORAGE SYSTEMS

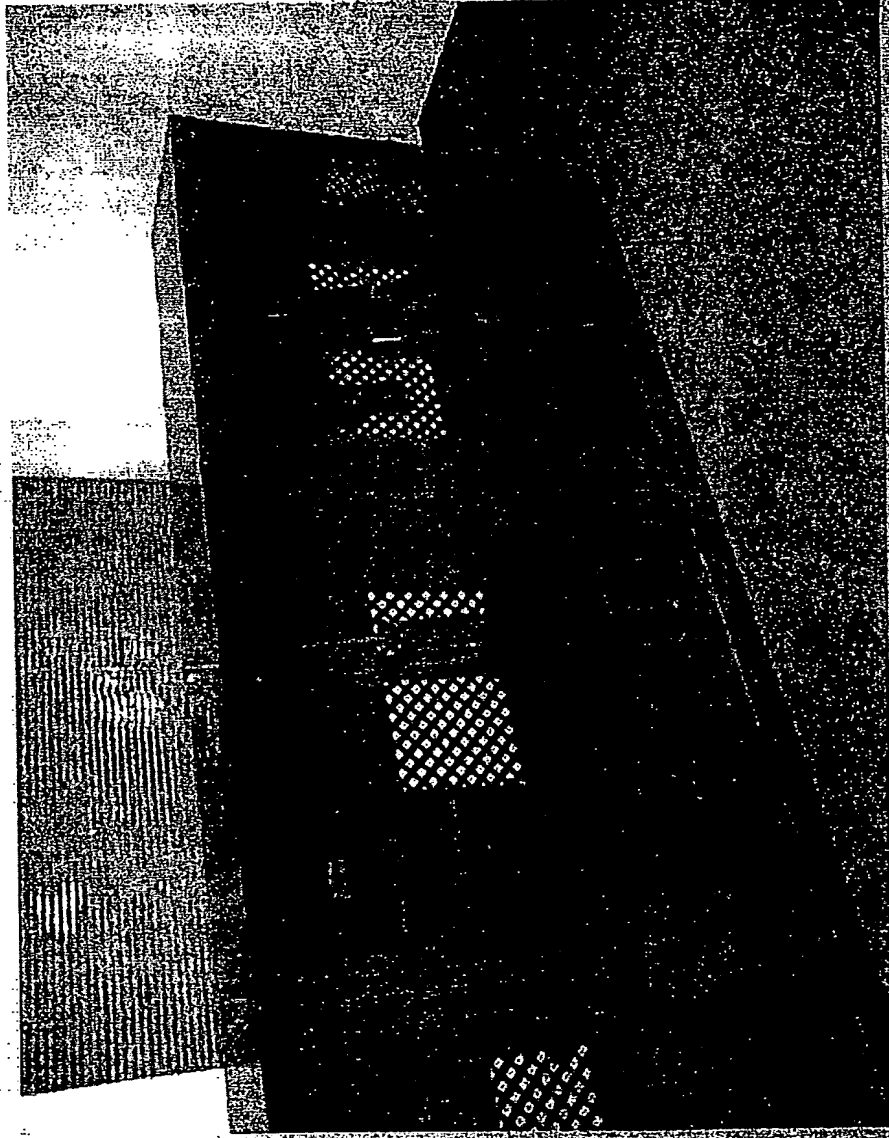
Universal Weapons Rack



 Spacesaver

STORAGE SYSTEMS

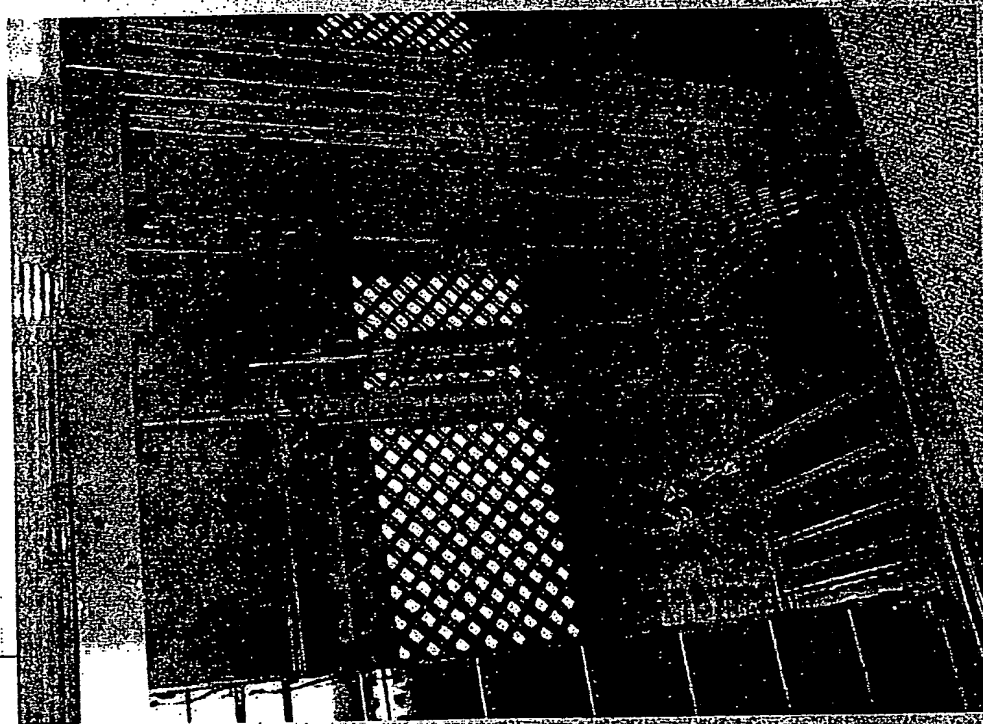
Universal Weapons Rack



 Spacesaver

STORAGE SYSTEMS

Universal Weapons Rack



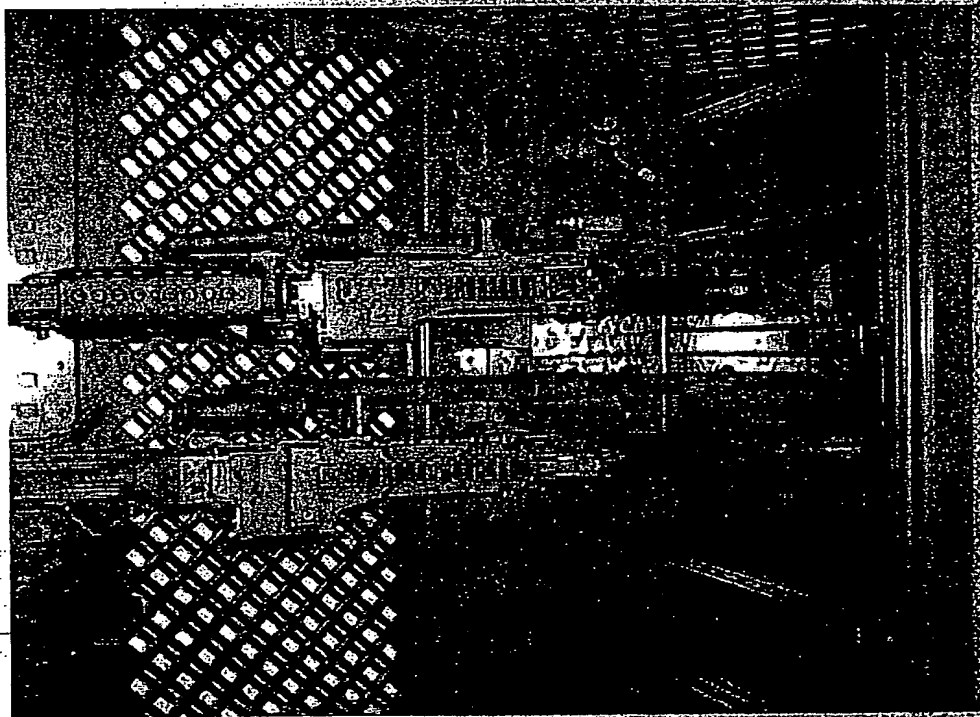
20

 **SpaceSaver**

 **BROWNING**

STORAGE SYSTEMS

Universal Weapons Rack



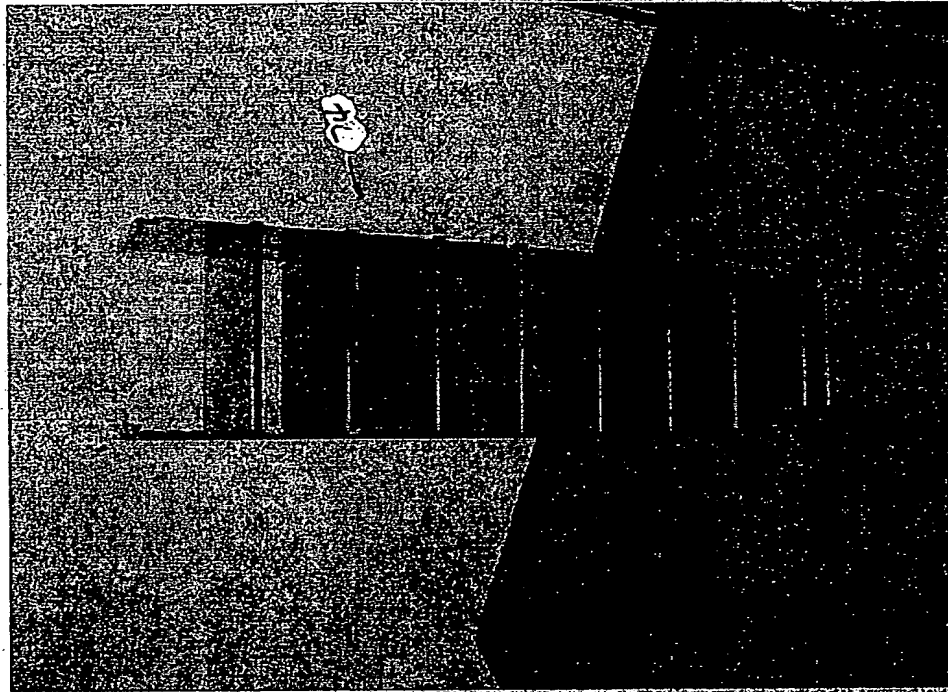
21

 Spacesaver

60457231.032503

STORAGE SYSTEMS

Universal Weapons Rack



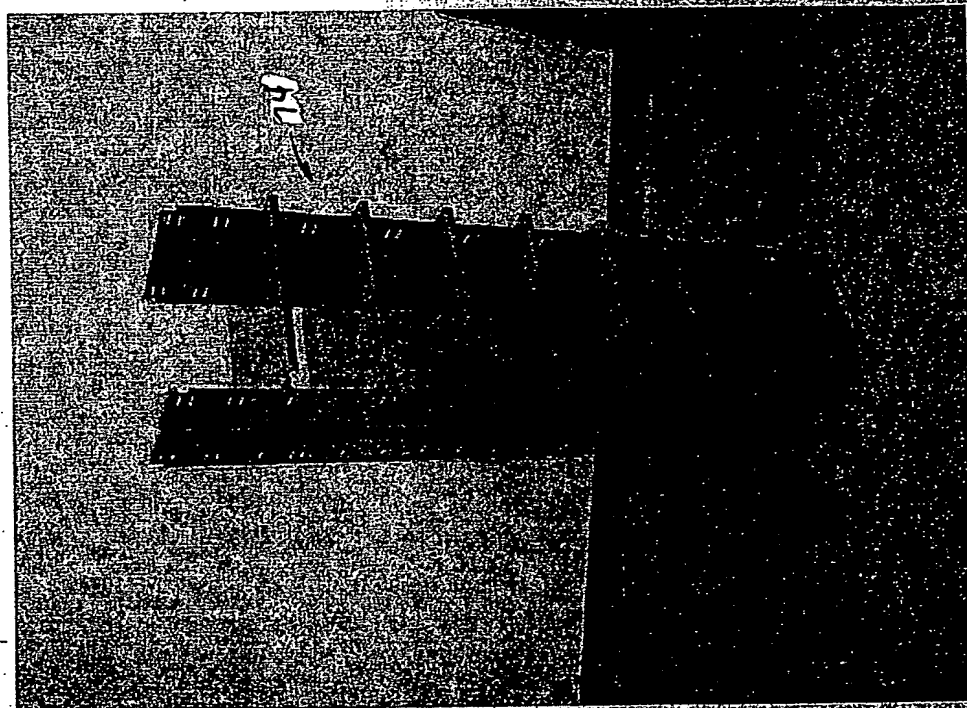
22

 Spacesaver

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



23

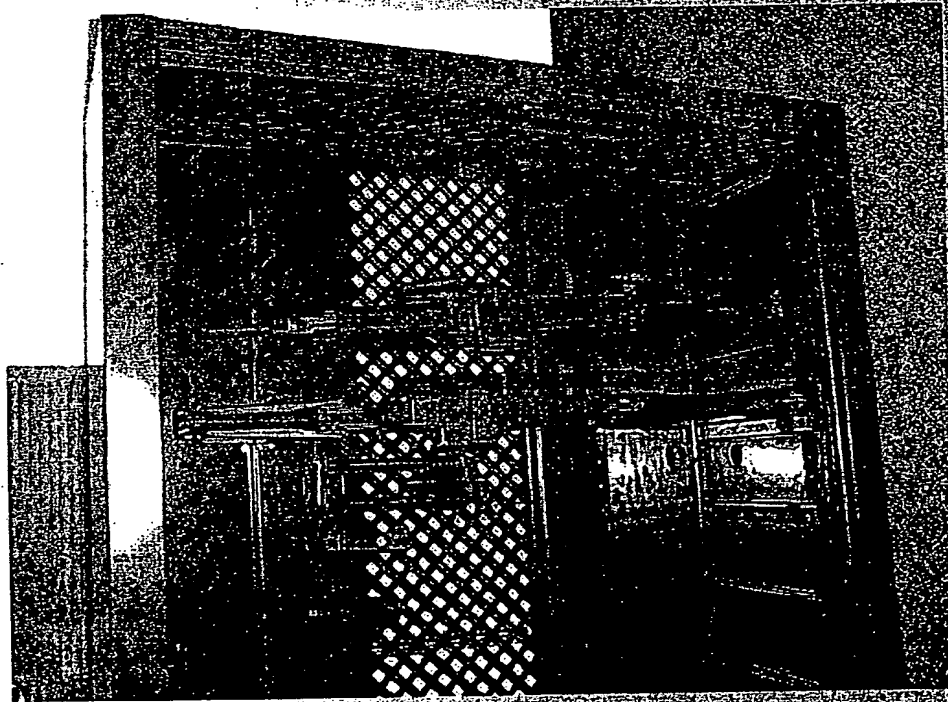


Spacesaver

60457231 .032504

STORAGE SYSTEMS

Universal Weapons Rack



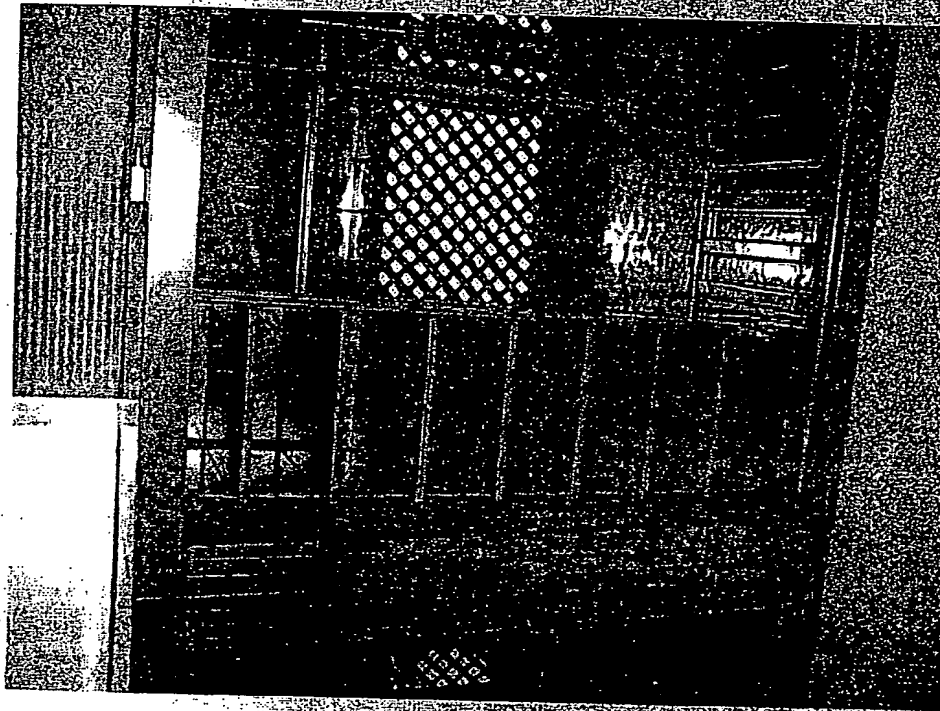
24

 Spacesaver

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



25

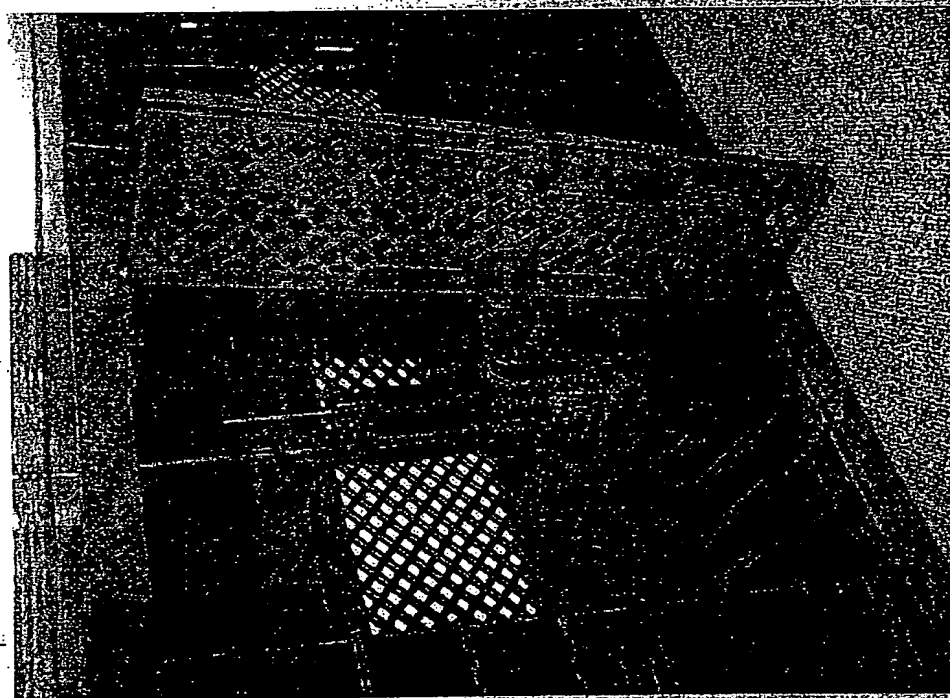


Spacesaver


60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



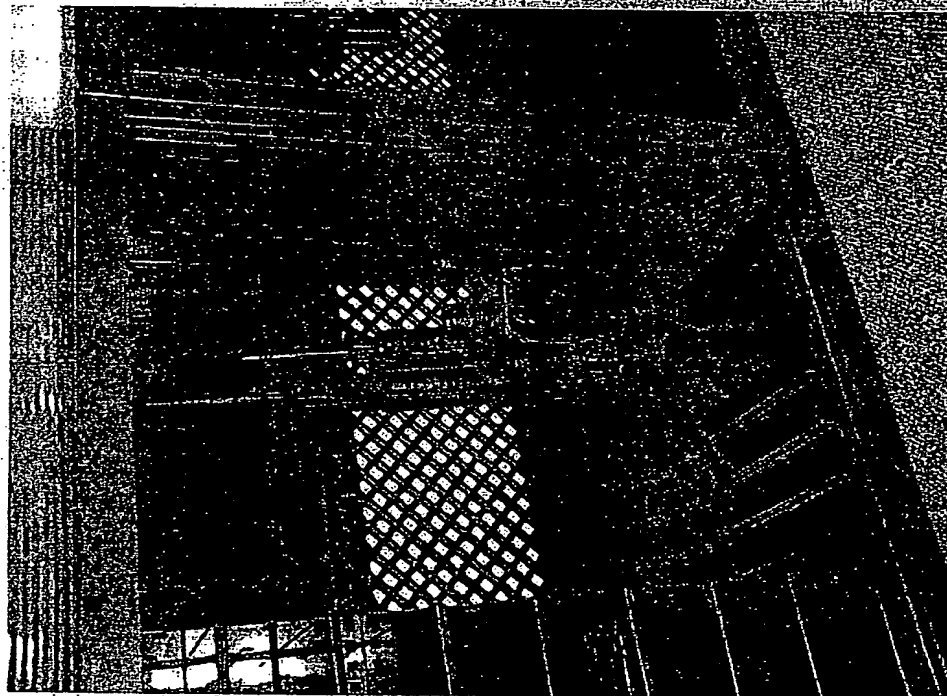
26

 Spacesaver

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



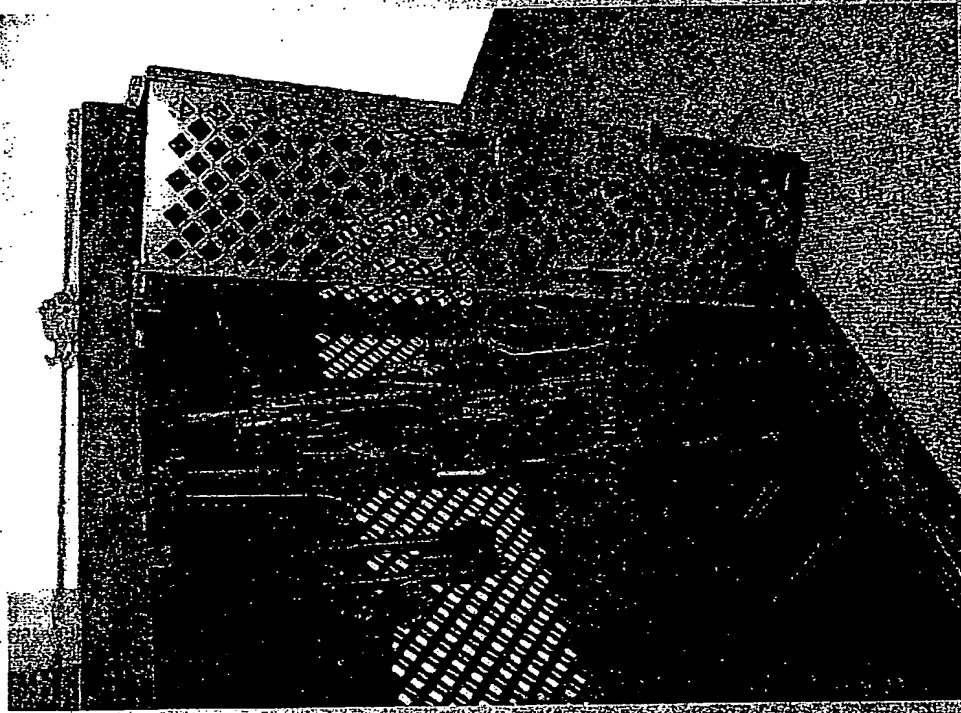
27

 Spacesaver

60457231 . 032503

STORAGE SYSTEMS

Universal Weapons Rack



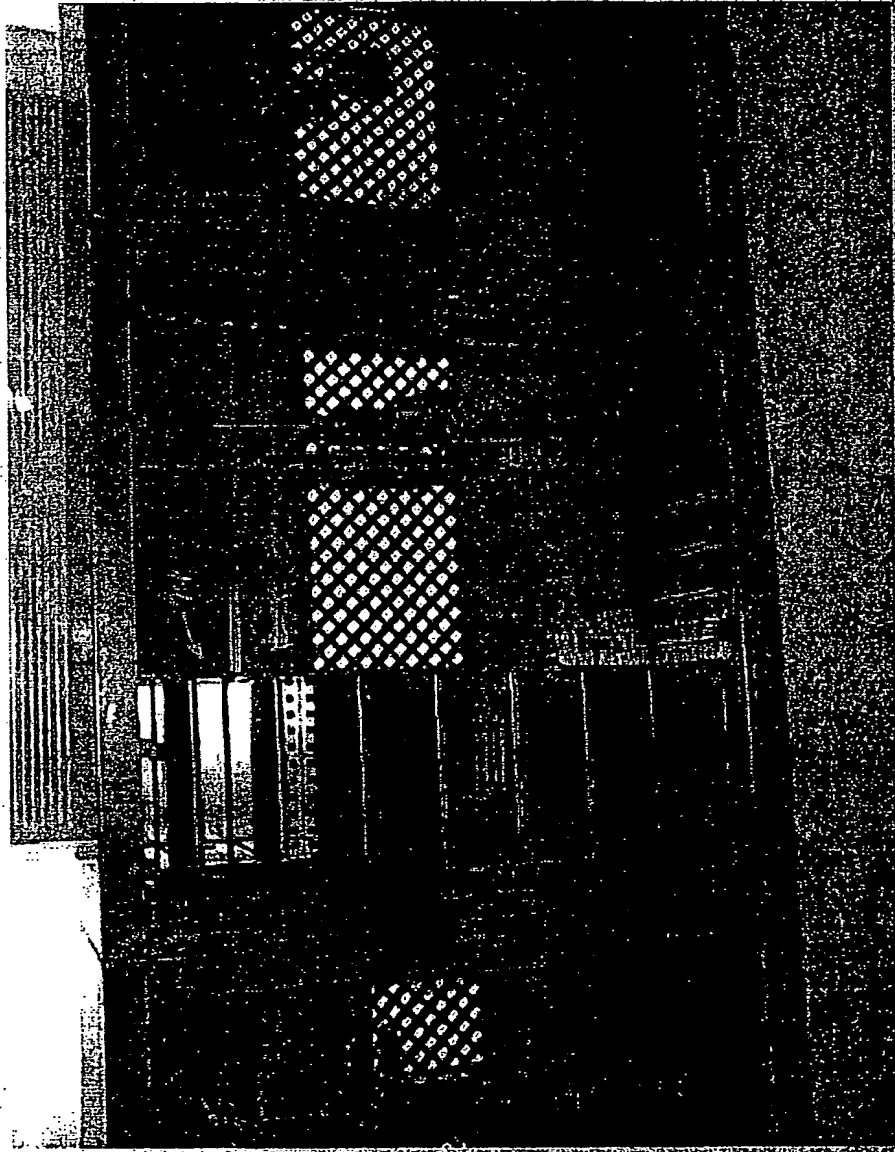
28

 Spacesaver

60457231 .032503

STORAGE SYSTEMS

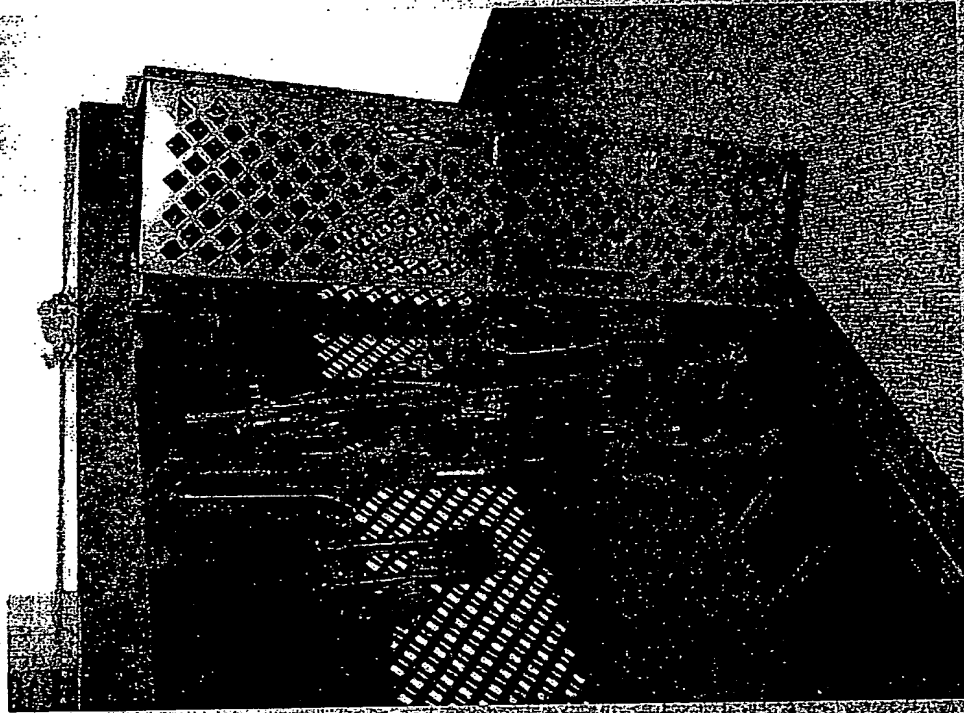
Universal Weapons Rack



 SpaceSaver

STORAGE SYSTEMS

Universal Weapons Rack



 Spacesaver

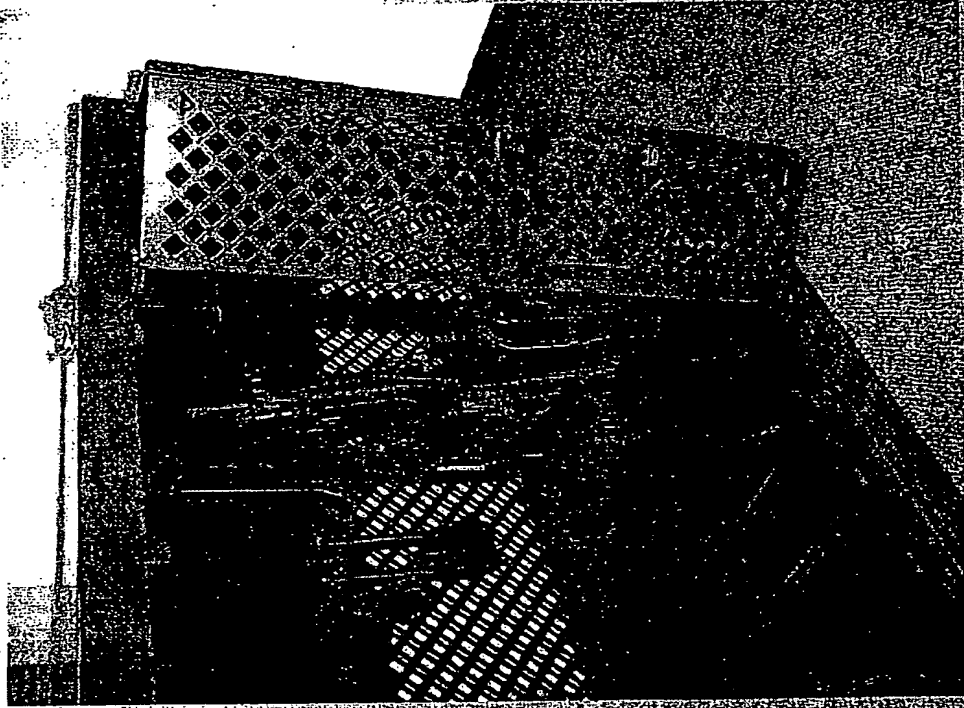
30


60457231 .032504



STORAGE SYSTEMS

Universal Weapons Rack



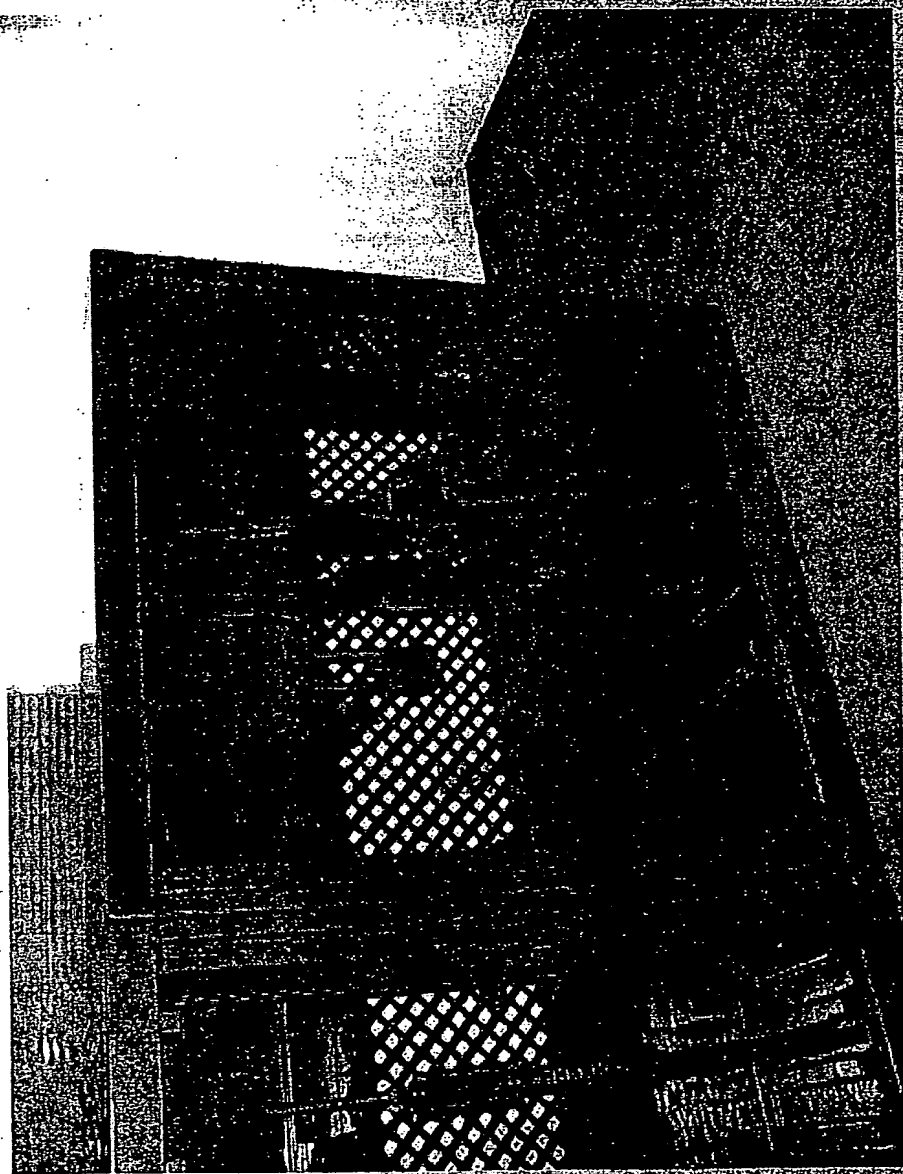
 Spacesaver

31

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



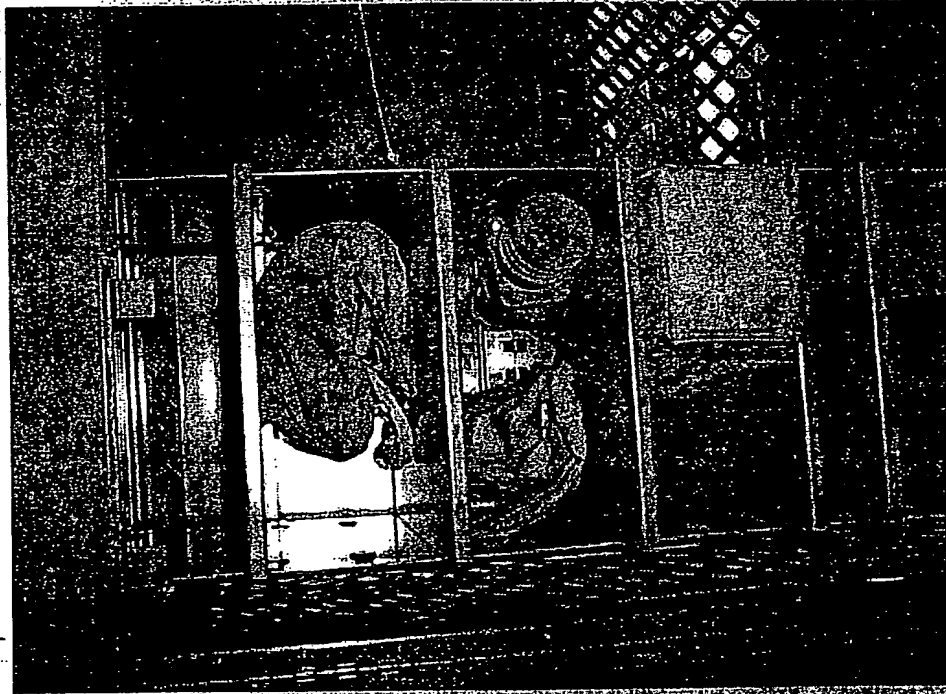
 Spacesaver

32

60457231.032503

STORAGE SYSTEMS

Universal Weapons Rack



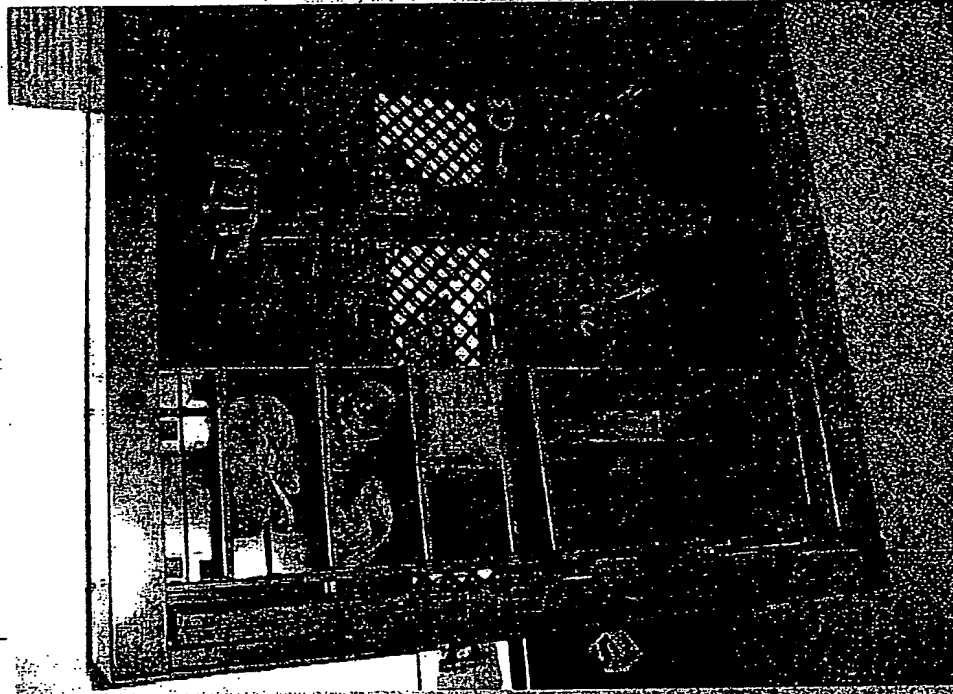
33

 Spacesaver

60457231 .032503

STORAGE SYSTEMS

Universal Weapons Rack



34

 Spacesaver

60457231 .03250N

Document made available under the Patent Cooperation Treaty (PCT)

International application number: PCT/US04/009142

International filing date: 25 March 2004 (25.03.2004)

Document type: Certified copy of priority document

Document details: Country/Office: US
Number: 60/457,231
Filing date: 25 March 2003 (25.03.2003)

Date of receipt at the International Bureau: 08 October 2004 (08.10.2004)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)



World Intellectual Property Organization (WIPO) - Geneva, Switzerland
Organisation Mondiale de la Propriété Intellectuelle (OMPI) - Genève, Suisse